



THE ROLES OF OFFSET ORGANIZATIONS IN THE REPUBLIC  
OF KOREA AND THE REPUBLIC OF CHINA

THESIS

Tsung-Cheng Wang, Lt. Col, ROCAF

Sang-Bum Shin, Major ROKA

AFIT/GSM/LAL/97J-2

DISTRIBUTION STATEMENT A  
Approved for public release;  
Distribution Unlimited

19970429 215  
DEPARTMENT OF THE AIR FORCE  
AIR UNIVERSITY  
AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

AFIT/GSM/LAL/97J-2

THE ROLES OF OFFSET ORGANIZATIONS IN THE REPUBLIC  
OF KOREA AND THE REPUBLIC OF CHINA

THESIS

Tsung-Cheng Wang, Lt. Col, ROCAF

Sang-Bum Shin, Major ROKA

AFIT/GSM/LAL/97J-2

Approved for public release; distribution unlimited

The views expressed in this thesis are those of the authors and do not reflect the official policy or position of the Department of Defense, the U.S. Government or the Governments of the Republic of Korea and the Republic of China.

THE ROLES OF OFFSET ORGANIZATIONS IN THE REPUBLIC OF KOREA AND  
THE REPUBLIC OF CHINA

THESIS

Presented to the Faculty of the Graduate School of Logistics and  
Acquisition Management  
of the Air Force Institute of Technology  
Air University  
Air Education and Training Command  
for the Degree of Master of Science in Systems Management  
and Logistics Management

Tsung-Cheng Wang  
Lt.Col. ROC

Sang-Bum Shin  
Major ROKA

March 1997

Approved for public release; distribution unlimited

### Acknowledgments

Several people were instrumental in the completion of this research. First and foremost, we would like to express our gratitude to Dr. Craig Brandt who participated in this research as our thesis advisor. He provides excellent support and guidance in our travels through the world of international offsets in arms sale.

In writing this thesis I had a great deal of help from others. First, I want to thank my superior, Col. Tsai Te-Lung, the representative of ROC's F-16 program, for giving us a lot of help and direction to find the information of this research. I also want to thank my formal instructor Dr. Ro-Chew Cho for providing me the offset information of Taiwan. He is the director of Aviation and Space Industry Development Committee in ROC. With his help, I can fully understand the current offset situation in ROC. Finally, I especially want to thank my wife Kuei-Chu, and my sons Wen-Yu, Wen-Shen and Wen-Mao to support and accompany me in going through these two years in AFIT.

Col Kim, In-Sik who is the Senior National Representative for KFP provided valuable assistance to us as a thesis sponsor and Lee, Hwa-Soo Lee who is the Senior National Representative for Kumgang and Baekdu program also supported us with valuable information. The members of the offset office in the Defense Logistics Agency in South Korea also provided valuable background information. We thank them for their time and efforts. I would like to give special thanks to my wife Choi, Bok-Nye my son Ki-Baek and my baby Andrew You-Baek. They all had a good and hard time supporting me to go through to the new areas.

Tsung-Cheng Wang

Sang-Bum Shin

## Table of Contents

	Page
Acknowledgment.....	ii
List of Figures.....	v
List of Tables .....	vii
Acronyms And Abbreviations.....	viii
Abstract.....	x
<b>I. Introduction .....</b>	<b>1</b>
Chapter Overview.....	1
Definition of Terms .....	1
The General Issue .....	3
Specific Problems .....	6
Investigation Questions .....	6
Research Design .....	6
Data Collection .....	7
Justification for Methodology .....	7
Scope and Limitations .....	8
Conclusion .....	9
<b>II. Offsets.....</b>	<b>10</b>
Chapter Overview.....	10
The Environment of the World Arms Trade.....	10
Examples of Offset Agreement .....	12
How Do Offsets Affect U.S. Interests?.....	15
Impacts on Employment.....	15
Impacts on Balance of Trade .....	16
Impacts on Defense Industrial Base.....	18
F-16 vs. Mirage 2000-5 .....	19
F-15 vs. Tornadoes .....	20
Government Offset Policy .....	22
US Government Policy .....	22
The Role of U.S. Organizations in Offsets .....	25
Annual Offset Report Required by USC 50, app § 2099 .....	27
Congressional Notification Requirements (Offsets).....	27
U.S. Firms Are Obligated to Report Offsets to Department of Commerce .....	27
Role of the Defense Security Assistance Agency (DSAA) .....	28
Role of the Defense Technology Security Agency (DTSA).....	29
The General Accounting Office (GAO) .....	30
The introduction of McDonnell Douglas offset policy.....	30
Conclusion .....	33
<b>III. The Korean Offset Policy and The Korean Fighter Program .....</b>	<b>34</b>
Chapter Overview.....	34
Background.....	34

	page
The Constitution and Government of South Korea .....	36
The Relationship with North Korea.....	37
The Relationship with the U.S.....	38
The Development of ROK's Defense Industry.....	40
Offsets of the Republic of Korea .....	42
Introduction .....	42
Definition of Terminology.....	43
The Basic Policies for Offsets .....	46
The Case of the Korea Fighter Program (KFP) .....	56
The Selection Process .....	56
F/A-18 Selection Process.....	59
The F-16 Selection Process .....	63
<b>IV. Case Analysis of the Republic of China (Taiwan) Offset Program.....</b>	<b>68</b>
Chapter Overview.....	68
Historical background.....	68
Location and Topography.....	68
Population.....	69
Relation with Mainland China.....	69
Economic Conditions .....	69
Aerospace Industrial Development.....	70
Background.....	70
Policy and Strategy .....	70
Practice of Main Points.....	71
Offset in ROC .....	72
Definition.....	72
Scope of Industrial Cooperation (offset) .....	73
Organizations of Offset .....	74
Function of Offset Organization.....	77
Government .....	77
Military .....	79
Military Organization and Procedure .....	79
Civilian .....	81
Principle of Implementation: .....	81
General Promotion Procedure .....	82
The weakness of executing offsets in ROC .....	86
Case Study of F-16 program.....	88
Background.....	88
F-16 Offset Agreement in ROC.....	89
Original.....	89
Dilemma .....	90
Achievement.....	91
Discussion.....	92
<b>V. Findings and Recommendations.....</b>	<b>94</b>
Chapter Overview .....	94
Findings.....	94
The role of political organization .....	95
Similar Points .....	95
Different Points.....	95

	page
The role of military organization.....	.95
Similar Points .....	.95
Different Points.....	.96
The role of industry organization .....	.96
Similar Points .....	.96
Different Points.....	.97
Recommendations.....	.97
Essential Requirement of Success .....	.98
Common Recommendations For Both of the ROK and the ROC .....	.99
Recommendation for ROK.....	100
Recommendation for the ROC .....	102
For the Future Research.....	103
Bibliography .....	104
Vita .....	113

## List of Figures

	Page
1: Unit Cost Increase with Time .....	19
2: Offset Relationship .....	26
3: In the pre-contract award activities .....	31
4: In the post-contract award activities .....	31
5: Offset Procedure .....	50
6: Military Offset Organization .....	80

## List of Tables

	Page
1: New Offset Obligations by Region, 1993 .....	17
2: The Analysis of F-15 Sales.....	20
3: The Impact of Offset on Seller (U.S.) .....	21
4: The Impact of Offset in Buyer (ROK, ROC) .....	22
5 : In the direct purchase from overseas .....	52
6: Licensed Production .....	54
7: ROC Top 10 Newly Developing Industries.....	70
8: The Execution Offset Plan for Five Years.....	85

## Acronyms And Abbreviations

1. ADD- Agency for Defense Development
2. AIDC- Aero Industrial Development Center
3. AIDP- Aerospace Industry Development Program
4. BXA- Bureau of Export Administration.
5. CAF- China Air Force.
6. CAL- China Air Line.
7. CSIST- Chung-Sun Institute of Technology.
8. CATT- General Agreement of Tariffs and Trade.
9. CASID- Committee of Aviation and Space Industry Development (CASID).
10. DLA Defense of Logistics Agency
11. DPRK-Democratic People Republic of Korea
12. DTSA- Defense Technology Security Agency
13. FC- Foreign Contractor
14. GAO- General Accounting Office
15. GD- General Dynamics.
16. LOA- Letter of Offer and Acceptance
17. IACP- International Armaments Cooperation Program.
18. IBD- Industrial Development Bureau.
19. ICSC- The Industrial Cooperation Steering Committee.
20. IDF- Indigenous Defense Fighter.
21. ILS- Integrated Logistic Support.
22. IRB- Industrial and Regional Benefit Program.
23. KIP- Korea Industry Participation.
24. KFP- Korea Fighter Program.
25. KMT- Koumintang.
26. MCT- Ministry of Construction and Transportation.
27. MFE- Ministry of Finance and Economy.
28. MLU- Midlife Upgrade.
29. MND- Ministry of National Defense.
30. MOA- Memorandum of Agreement.
31. MOEA- Ministry of Economic Affairs.
32. MOF- Ministry of Finance.
33. MOTI- Ministry of The Interior.
34. MST- Ministry of Science and Technology.
35. MTIE- Ministry of Trade Industry and Energy.
36. NATO- North Atlantic Treaty Organization.
37. OECD- Organization for Economic Cooperation and Development.
38. PM- Program Management.
39. RFP- Request For Proposal.
40. ROC- Republic of China.

41. ROC- Required Operational Capabilities.
42. ROK- Republic of Korea.
43. ROKAF- Republic of Korea Air Force.
44. SE- System Engineering.
45. TAA- Technical Assistance Agreement.
46. WSAMO- Weapon System Acquisition Management Office.
47. WTO- World Trade Organization.

Abstract

This study sought to describe the role of offset organizations in international arms sales. To describe the role of offset organizations, we separated the political, military, and industrial offset organizations in the international arms sale.

In the literature review, offset history was introduced for the background of this research, and the impact of offset agreements on both sellers and buyers was discussed. The U.S. and McDonnell Douglas offset policies and organizations were described as a main supplier. South Korea and Taiwan offset policies procedures and organizations were described as an example of recipient countries. Korean Fighter Program and Taiwan F-16 programs also were described as cases.

As one result of this research, that both ROK and ROC want to use the offset agreements to acquire the high technology for improving their aerospace industrial competition in the world and finally become high-tech industrial countries. Second, the ROK's offset organization looks like a bottom-up organization, and it emphasizes the procurement units in Ministry of National Defense (MND). However, the ROC's offset organization is a top-down organization, and it emphasizes the top management level in Department Ministry of Economic Affairs (MOEA).

Both of their offset organizations have some merits and defects, so we made some suggestions for both of them to effectively improve their offset organizations for the future offset agreements.

THE ROLES OF OFFSET ORGANIZATIONS IN THE REPUBLIC OF KOREA AND  
THE REPUBLIC OF CHINA

I. Introduction

Chapter Overview

This chapter is the introduction of this thesis. It will begin with the definition of offsets and other critical terms. Then, it identifies the general issue, the specific problem and the investigative questions for this research effort. Next, this chapter provides the research design and the data collection method for this research. Finally, the methodologies used for this thesis will be described and the justification for the methodologies will be discussed.

Definition of Terms

Listed below are offset definitions as outlined in “Offsets in Defense Trade” (13:7).

**OFFSETS:** Industrial compensation practices required as a condition of purchase in either government-to-government or commercial sales of defense articles and/or defense services as defined by the Arms Export Act and the International Traffic in Arms Regulations.

**DIRECT OFFSETS:** Contractual arrangements that involve defense articles and services referenced in the sales agreement for military exports.

**INDIRECT OFFSETS:** Contractual arrangements that involve goods and services unrelated to the exports referenced in the sales agreement.

**MILITARY EXPORT SALES:** Exports that are either Foreign Military Sales (FMS) or commercial sales of defense articles and/or defense service as defined by the Arms Export Control Act and International Traffic in Arms Regulations.

**CO-PRODUCTION:** Overseas production based upon government-to-government that permits a foreign government(s) or producer(s) to acquire the technical information to

manufacture all or part of a U.S. origin defense article. It includes government-to-government licensed production. It excludes licensed production based upon direct commercial arrangements by U.S. manufacturers.

**LICENSED PRODUCTION:** Overseas production of a U.S. origin defense article based upon transfer of technical information under direct commercial arrangement between a U.S. manufacturer and a foreign producer.

**SUBCONTRACTOR PRODUCTION:** Overseas production of a part or component of a U.S. origin defense article. The subcontract does not necessarily involve license of technical information and is usually a direct commercial arrangement between the U.S. manufacturer and a foreign producer.

**OVERSEAS INVESTMENT:** Investment arising from the offset agreement, taking the form of capital invested to establish or expand a subsidiary or joint venture in the foreign country.

**TECHNOLOGY TRANSFER:** Transfer of technology that occurs as a result of an offset agreement and that may take the form of research and development conducted abroad, technical assistance provided to the subsidiary or joint venture of overseas investment, or other activities under direct commercial arrangement between the U.S. manufacturer and a foreign entity.

**COUNTERTRADE:** In addition to the types of offsets defined above, various types of commercial countertrade arrangements may be required. A contract may include one or more of the following mechanisms:

Barter: A one-time transaction only, bound under a single contract that specifies the exchange of selected goods or services or another of equivalent value.

Counter - purchase: An agreement by the initial exporter to buy (or to find a buyer for) a specific value of goods (often stated as a percentage of the value of the original export) from the original importer during a specified time period.

Compensation (or Buy-Back): An agreement by the original exporter to accept as full or partial repayment products derived from the original exported product.

Listed below are offset definitions as outlined in the management of international cooperative projects December 1989 (2:14).

**CODEVELOPMENT** - Development of a system by two or more nations in which the costs of development as well as the design effort are shared. Codevelopment is a subset of cooperative R&D.

**COOPERATIVE RESEARCH AND DEVELOPMENT** - Any method by which governments cooperate to make better use of their collective research and development (R&D) resources to include technical information exchange, harmonizing of requirements, codevelopment, interdependent research and development, and agreement on standards.

### The General Issue

The definition of offsets includes a broad range of complex compensatory terms by foreign trade partners as a condition of sale, particularly for military and aerospace products. Offset agreements are very flexible, and they allow many combinations of different contracts at the same time.

Offsets arose in the late 1950s and early 1960s in response to the legitimate need to rebuild the industrial base for defense in Western Europe and Japan. At that time, offset agreements may have been justifiable for reducing the impact of military equipment purchases on the budgets and trade accounts of these countries. Offsets have contributed to standardizing and modernizing the arms inventories of the alliance, and to strengthening transatlantic ties in defense of NATO countries. Offsets also contributed to commerce with the Eastern Bloc due to the impossibility of exchanging their currencies with the Western market (40:6).

Now, times and circumstances have changed, but offsets remain. The concept of offset is a relatively new development for most defense companies and governments that are now involved in it. Although some of the basics are old such as barter, its modern sophistication is new and dynamic. Foreign governments and firms ask for offsets that require industrial and commercial compensation as a condition for the purchase of military exports. The offset agreement may be part of a government-to-government agreement or a commercial sale of defense articles or services (4:1).

Since 1975, many countries purchasing major equipment have required offset agreements to boost their industrial economies. Offset agreements are agreements

between the buying and selling countries as conditions for military exports (4:1). The two types of offsets are direct and indirect. Direct offsets include co-production, buybacks, directed subcontracting, investments in defense firms, concessions, technology transfers and licensed production. Indirect offsets include procurement, investments in non-defense firms, trading of commodities and foreign defense related projects (5:18).

Since the late 1940s, the U.S. has coproduced major systems in Europe. A major European co-production of a US weapon system was the 1975 F-16 program with Norway, Denmark, Belgium, and the Netherlands (3:15). The number of countries that require some form of counter trade has risen from about fifteen in the early 1970s to approximately one hundred in 1990 (3:16). There were many successful programs, but some had problems. According to a study by Michael Farr analyzing fourteen programs, six of the projects were rated as fully successful while eight were rated as less than successful (2:183).

South Korea and Taiwan want to have advanced technologies by using offsets for its defense and commercial industries. They have offset policies and organizations for the successful offset agreements; however, they satisfy some of their programs but do not all of them. For instance, Lockheed Martin, which sold 8 P3C to South Korea, did not perform well in their offset agreement. So South Korea is looking for a possible solution for this problem. In the 1991, Lockheed had an offset agreement with the Jindo company in the South Korea to provide the technology for building grain warehouses and the guarantee for exporting \$ 200 million worth of grain from the South Korea. However, Lockheed recently selected as subcontractor the ILCON company which does not have the capability for this. South Korea expects that this company cannot fulfill the offset

agreement. One possible solution is to withdraw the deposit money. The other solution would be to sue Lockheed using the international arbitration committee. South Korea also would reduce the contract with Lockheed in the future (41). This is not good situation for the buyer nor the seller.

A successful offset agreement has many factors between the buyer and the seller. A study by Kremer states that the factors are related to the buyer, seller, contract, and product. Buyer related factors are international experience, offset experience, the competition, technical experience, sufficient financial resources, and a stable environment. Seller related factors are compatible goals, proactive strategy, in-house offset group, international experience, offset experience, size of companies, commitment to project, and top management support. Contract related factors are transferability of obligations, dual contracts, large dollar value, long payback period, and low penalties. Product related factors are maturity of the technology, complexity of the product, and high visibility of the product (3:97). Farr's study focused on successful project management and mentioned that good organization made successful offset agreements. However, good internal management does not guarantee success.

Previous studies have examined management but not the organizational structure. Political, military and industrial organizations are considered important for a successful offset agreement. The differences in the three organizations between the buyer and the seller are often the root of the problem. The importance of offset proposals in making sales for US defense contractors highlights the need to identify whether or not the internal organizational differences create problems in the offset agreement. These findings will provide all parties with the necessary information for successful offset agreements.

### Specific Problems

The basic problems in offset agreements can be traced to the industrial participation of the purchasing country. The problem statement for this project is "How do both buyers and sellers organize an offset agreement?".

### Investigation Questions

There are three basic investigative questions in this study:

1. What is the role of the political organization in offset agreements in an arms sale, and what problems could result from this role?
2. What is the role of the military organization in offset agreements in an arms sale, and what problems could result from this role?
3. What is the role of the industrial organization in offset agreement in an arms sale, and what problems could result from this role?

### Research Design

This study will use a four stage design to address the research objectives. First this research will describe the policies and roles of the political, military, and industrial organizations in South Korea and Taiwan. Second, the Korean Fighter Program and Taiwan Fighter Program are to be used as cases for this study. Third, we will compare the organization in South Korea to the organization in Taiwan. Finally, we will give some suggestions to both South Korea and Taiwan.

## Data Collection

Since the increase in international arms transfers after the 1970s, social and political scientists have studied various aspects of arms transfers and drawn conclusions from existing data. This paper focuses on the role of organization related to offset agreements. In phase one, to describe the policy and role of the organization, data will be collected by a review of documentation. In phase two, to describe the Korean and Taiwanese fighter programs as case studies, data will be collected by personal interviews with individuals involved in the programs as well as a comprehensive review of the literature. These individuals will represent the parties involved in the negotiation such as US government agencies, US companies, and Taiwanese and Korean representatives. In phase three, collected data will be used to compare the differences between the Korean and the Taiwan fighter programs. These are also to be used to give some suggestions to South Korea and Taiwan in phase four.

## Justification for Methodology

This paper focuses on the description of the role and policy of the organization. First, we want to provide the procedures and role of each organization for all parties. Second, we cannot judge whether current roles and policies of each organization are good or not because they have different circumstances.

The researchers chose the case study as their primary research tool for this effort. The case study has long been stereotyped as a weak sibling among social science methods. Researchers who do case studies are criticized because their investigations have insufficient precision, objectivity, and rigor. While case studies are not as rigorous as

statistical studies, they are still valuable because they can provide a major challenge to a theory and provide a source of new hypotheses and constructs at the same time (42:143). This thesis is one example of the application of the case study method, which was chosen due to its facility in handling complex problems about a contemporary set of events, over which the researcher has little or no control. Next, offset agreements are a relatively new area of study, and the existing knowledge is limited. Finally, it is hard to compare the role of organizations or the policy and procedure of offset agreements between the different countries because each country has a different background. For instance, South Korea and Taiwan have different relationships with the U.S. They also have different offset purposes and different military, political, and industrial environments.

### Scope and Limitations

This research describes the basic policies and roles of South Korean and Taiwanese organizations and the differences between them. This will provide all parties with information needed for successful offset agreements. The limitations of this study include:

1. The value of offset agreements will not be discussed.
2. The contents of offset agreements will not be mentioned.
3. This research will not discuss whether or not the government, Department of Defense, and defense industry need to change their work system for successful offset agreements.

## Conclusion

In this chapter, the definition of offset terms, the general issue, the specific problem and the investigative questions are described. The research methodologies and data collection are also described. In the next chapter, the literature review for offsets is presented. Chapter III identifies the offset policy and the role of offset organizations in South Korea. The Korean Fighter Program (KFP) is identified as the case for the study. Chapter IV presents the offset policy and the role of offset organizations in the Taiwan. The Taiwanese F-16 program is identified as the case for the study. Finally, we describe the different roles of each of the organizations in South Korea and Taiwan, and we provide suggestions for both countries which would allow a successful offset agreement to be reached.

## II. Offsets

### Chapter Overview

This chapter will discuss the general concept of offsets, the background of the international arms market, and the factors that led to the growth in the use of offsets. This discussion will include examples of offset agreements in recent years and the importance of free trade in the world. Especially, we will discuss the effects of offsets on employment, balance of trade, the defense industrial base, and political factors for both buyer and seller. We will use the above information to discuss the process and organization of executing offset agreements in the Republic of Korea and the Republic of China (Taiwan).

### The Environment of the World Arms Trade

Countries require offsets for a variety of reasons. In the past, these agreements were used as methods of financing trade. Both buyers and sellers try to make the best of unfavorable economical conditions. During the worldwide depression of the 1930s, businesses and governments were unable to finance imports and exports due to extensive exchange restrictions, large debts, soft currencies, and low foreign exchange reserves (50:191). Today, offsets are used as a marketing tool by the high technology exporters. At the same time, buying governments can use offsets to decrease the burden of large defense purchases on their economy, to increase or preserve their countries' jobs, and to improve and maintain their industrial technology base (51:6).

After World War II, U.S. military assistance in the early post-war period focused primarily on the transfer of U.S. arms from stockpiles of surplus war materiel. These arms transfers were made to participants in an emerging network of U.S. alliances and provided as grant aid to help Europe defend itself against communism as it rebuilt its damaged industries (52: 6-10). Since U.S. arms transfer policy changed from Truman's Military Assistance Program (MAP) to Foreign Military Sales (FMS), U.S. defense industries have become major players in the international arms market. Co-production and licensed production of U.S. weapon systems in foreign countries began in the late 1950s and early 1960s. The NATO countries and Japan were the first to receive co-production/licensed production agreements from the United States (51:5). From 1960-1975, the demand for offsets spread and their numbers multiplied. Offset agreements were negotiated between the United States and other developed countries (NATO, Japan, Australia, Switzerland) and Third World countries ( Taiwan, Singapore, Korea, India, Pakistan, Thailand, the Philippines, Iran, Argentina, and Brazil). Now, almost all arms producers in the world have negotiated offset agreements with the purchasing countries (53:4-7).

In the early 1970s, Western European countries were anxious to develop indigenous defense industries. While advanced weapon systems are more expensive than conventional weapons, most countries cannot afford the huge R&D costs (54:75-76). The optimum solution to this problem was to ask for licensed production or co-production of exported weapon systems to effectively reduce the research and development costs. Among licensed production programs, the earliest was the F-104 aircraft and the HAWK air defense system in Europe (55:14). The most important European co-production of a

U.S. weapon system was the 1975 F-16 program with Norway, Denmark, Belgium, and the Netherlands (55:15). These four NATO countries agreed to purchase 348 F-16 fighter from the U.S., and the total \$2.8 billion contract included offset provisions (56:20). General Dynamics guaranteed that these four countries would receive production contracts worth at least 58% of the purchase price (57:5). This trade encouraged other European countries and buyers to ask the same kind of offset agreements.

#### Examples of Offset Agreement

Lewis W. Snider (the author of "Arms Transfer and the Diffusion of Power: Implications for Foreign Policy") thinks the change in the characteristics of the arms market means that the major suppliers no longer have the strong power and influence as they once did. Formerly, only superpowers (the U.S. and the former Soviet Union) could provide arms to the world, but now many Third World weapon suppliers are entering the world arms market (58:34). Today the arms markets are beginning to change from a seller's market to a buyer's market. In recent years, U.S. prime defense contractors reported to the Bureau of Export Administration (BXA) that they often must fulfill these offset demands, or risk losing a valuable sale. In most cases, defense contractors cannot even submit a bid proposal without including an offset package in the competitive world market (51:5).

From the 1970s to the 1990s, purchasing countries asked for offset credit which varied from about fifteen percent in the early 1970s (59:72), to twenty-seven percent in 1979 (60:28), to eighty-eight percent 1984 (61:31), and to 100 percent in 1990 (62:5).

These percentage numbers include not only defense related trade, but they also include non-defense trade.

The best way to describe a case of successful offset is to use real world examples. For an example of direct offsets, the U.S. and Turkish governments signed an offset agreement in 1983 to procure and to co-produce 160 F-16 fighters over a ten-year period. General Dynamics (GD) agreed to allow the assembly of 152 F-16 in Turkey using parts from U.S. and European plants (those which co-produced parts for the sale to Norway, Belgium, Denmark and the Netherlands) and from newly built Turkish plants co-owned by General Dynamics (GD), General Electric, Turkish industry and the Turkish government (57:7). The project was to cost about \$ 4.5 million (63:3-7). The major reason for Turkey to purchase the F-16 was the military requirement to modernize its aging fleet of aircraft. At the same time, Turkey wanted to lessen the financial burden on its economy and created some additional benefits for its country. The Turkish defense minister frankly admitted that Turkey looks upon the new facility as a potential base for establishing a modern aeronautics industry. This offset agreement not only provides for their ability to maintain and modify the F-16, but assures Turkey of technology transfer, training, and research and development in the future (50:195).

As an indirect offset example, the Northrop Corporation contracted with Switzerland for the sale of 72 F-5 fighter aircraft in 1975. It agreed to offset 30 percent of the program by helping the Swiss market their products through Northrop's worldwide marketing facilities. Thomas V. Jones, president of Northrop, is quoted as saying "by using our international offices we have helped sell Swiss-made shelving for a Saudi-Arabian construction program and Swiss-made hoses to a Mexican oil firm." Under a 38

plane 1980 extension of the original program, Northrop marketed Swiss merchandise equal to 50 percent of the total contract value. In the follow-on agreement, Swiss refrigerators were sold in Saudi Arabia, and different buyers were found for Swiss generators and other products (64:43).

As an example of a barter deal, Saudi Arabia and Boeing Corporation made an offset agreement in 1984. The agreement involved the exchange of 36 million barrels of oil priced at \$27.92 a barrel to barter for 10 wide-bodied 747-300 transport aircraft. The agreement was concluded through a major financial institution which guarantees the counter deliveries to the Saudi Arabian government. However, the oil was never in Boeing's possession since it was sold on the free market at the current price. The free market price was about \$27.20 per barrel which compared to the purchased price meant that Boeing lost 72 cents per barrel (65:53).

In the above examples, the offsetting products may be related to the sale (direct offset), such as aircraft or technology transfer, or not related to the sale (indirect offset) like barter or purchasing other products. The 1993-1994 data gathered by the Department's Bureau of Export Administration (BXA) highlights a continuation of this trend of expanded indirect offsets. In 1993-1994, the breakdown of the actual offset transactions that took place look like this: (51:7).

1. 1/3 of the offsets were direct (related to the systems sold);
2. 2/3 were indirect (not related to the systems sold);
3. 3/4 of total offsets (combined direct and indirect) involved the purchase or subcontracting of goods and services or transfer of technology.

### How Do Offsets Affect U.S. Interests?

The Bureau of Export Administration (BXA) is involved in a survey of the influence of offsets on defense subcontractors. One tool used by BXA is the Competitive Enhancement and Defense Diversification Needs Assessment Survey (OMB Control Number 0694-0083). This survey is directed toward small and medium sized business in the U.S. and seeks to match the defense conversion and competitive enhancement needs of these firms with assistance programs available through federal and state governments. The total number of respondents to the BXA survey was 1,153 firms and 936 (85% of 1,153) of these firms were involved in offset agreements, with 31% of sales going to defense markets (51:63).

The firms' opinions can be divided into negative and positive aspects. The negative comments are that they had lost business because the offset agreements may eliminate small companies that do not have the organizational and financial abilities to manage offsets like the big companies such as Boeing, Lockheed, etc. As a result, they will lose access to worldwide markets (66:131).

The positive comments are that they maintained and increased business due to offset agreements. Some firms report that they have received business from foreign companies, gained new markets, and easily entered the foreign markets (51:65).

### Impacts on Employment

U.S. labor unions contend that offsets negatively affect their interests. They believe products imported into U.S. due to co-production, barter, buy-back, compensation, or licensed production will cause the loss of U.S. jobs (67:4). A proper

example of this situation is the Canadian F-18 offset agreement between McDonnell Douglas and Canada. Canadian subcontractors have been producing F-18 items for McDonnell Douglas (68:63). The parts were previously made in the U.S., but the companies need to fulfill the agreement to be made in Canada, causing the loss of U.S. jobs. Many U.S. companies quoted in the Department of Treasury survey felt they have not been hurt by offset agreements. On the contrary, the offset created additional sales and markets for them and helped expand the firm's influence overseas (69). About the issue of losing jobs, the author of "Paying for Weapons" said even if there were a net loss, the impact would be insignificant because industries that produce arms for foreign sales represent only about 200,000 to 300,000 jobs or about one-half of one percent of private sector jobs (67:131-132). When defense sales increase, the jobs simultaneously increase, so the job impact is minor for the offset agreement (70:4). In 1988, the OMB report on offsets in military exports concludes that "The total effects on U.S. jobs is minor, if not actually positive."

#### Impacts on Balance of Trade

Offsets might have some negative impacts on the balance of trade, but these can be reduced in three ways. First, offset credits are often recorded at more than a one to one ratio. For example, General Dynamics' worldwide offset experiences show they only need to spend 4 cents for each dollar's value they receive ( 71:35). Second, the pay-back period is often longer than the contract period, so it can reduce the current dollar value loss (72: 61). Third, firms can make up for any lost profits by increased business in other areas to earn more money (71:96). The industry reported to BXA that buyer

countries often appear to absorb the higher cost associated with diversified offsets, particularly co-production agreements because they think this is the best way to gain technology and increase domestic jobs (51:6).

There were 29 new agreements reported by 18 companies in 1993 (table 1).

Almost half of these new agreements were with eight European countries, Denmark, Greece, Norway, Netherlands, Portugal, Spain, Switzerland, and the United Kingdom. A high percentage (78%) of offsets occurs in those areas, but the sales accounted for only 21% of dollar value of 1993 total sales. Pacific Rim nations- Taiwan, South Korea, and Malaysia- accounted for half of new export sales, but only 14% offsets made in this region (51:28). The total amount of sales are \$13.9 billion in 1993, and it was helpful in balancing the trade.

Table 1- New Offset Obligations by Region, 1993

Region	# Deals	Sale (\$mil)	Offset (\$mil)	% Offset	# Months
Europe	14	2,985.017	2,338.053	78.3%	91
Middle East	4	4,143.861	1,462.100	35.3%	96
Pacific Rim	7	6,717.659	943.766	14.0%	78
Other Areas	4	98.467	50.515	51.3%	83
World Total	29	13,945.004	4,794.434	34.4%	87

Source: BXA Federal Register Offset Data

### Impacts on Defense Industrial Base

Because of the superiority of U.S. technology and weapon systems, U.S. defense contractors usually have an advantage over foreign countries in terms of the types of direct and indirect offsets they can provide. Defense offsets may create or enhance foreign competitors, increase their defense production capability, replace U.S. firms, and reduce U.S. jobs. Generally, the great majority of offset demands come from potential competitors, including Canada, Japan, and most European countries (51:70). How do offset agreements affect the U.S. defense industrial base and national security interests?

Many authors warn that co-production and licensed production abroad can lead to increased American dependence on foreign subcontractors and suppliers. This could threaten both the defense industrial base and U.S. military preparedness (73:95-96). Now, U.S. foreign policy plans to use the International Armaments Cooperation Program (IACP) to cooperate with her allies and friends for armaments and logistics cooperation at various levels (74:429). Some observers believe that offset can promote Rationalization, Standardization and Interoperability (RSI) with our allies and reduce each country's procurement costs. For instance, the average unit cost of the tactical aircraft increased from \$800,000 for the F-100 in the 1950s to \$30 million for the F-16 in the 1990s, so most of the countries could not afford the high cost of the advanced fighter (Fig 1, 58:38). They think that without offsets U.S. allies might choose not to modernize their forces or purchase from another suppliers to meet their military needs, either of which will negatively affect the allies' capabilities and increase the American defense burden (75:210).

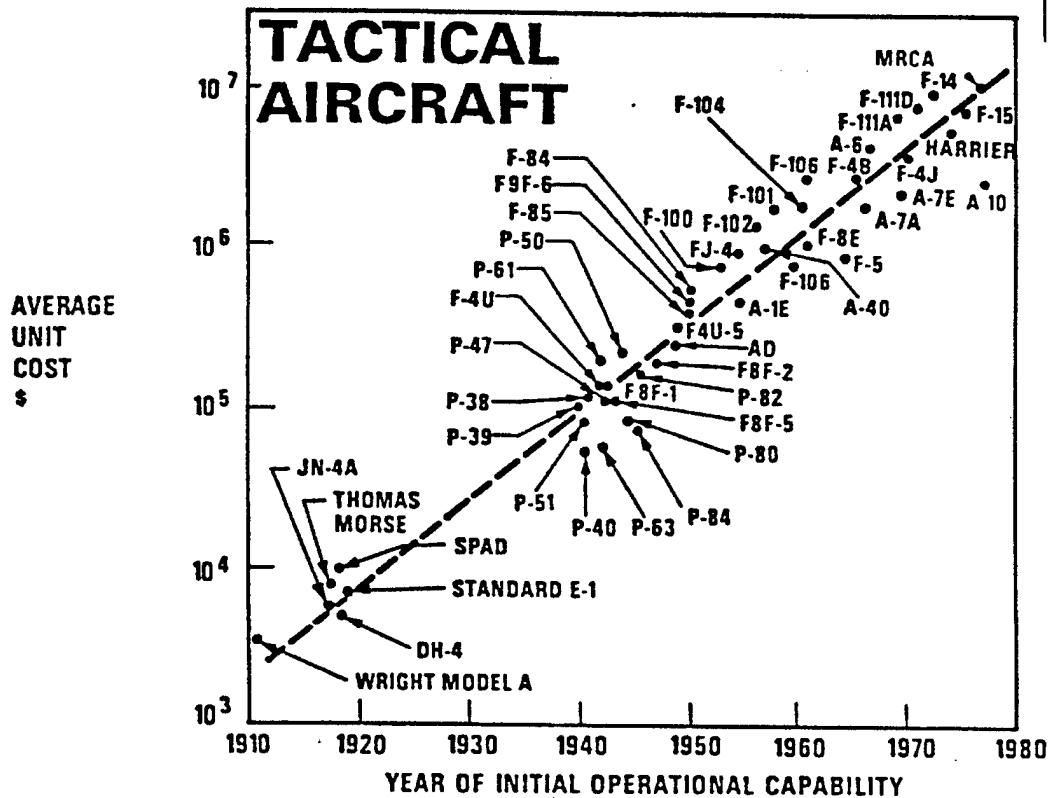


Figure 1: Unit Cost Increase with Time

Two examples can explain the above situation.

#### F-16 vs. Mirage 2000-5

In 1982, the Republic of China (Taiwan) wanted to purchase the F-16 and retire the aging F-104, but the U.S. did not approve this sale, so they developed their own Indigenous Defense Fighter (IDF) to enhance their defense capability. In 1991, the Republic of China expressed again that they wanted to purchase the F-16, but the U.S. still did not approve this application. The Republic of China was looking for other

suppliers to purchase a new, advanced fighter. In 1992, the Republic of China successfully purchased 60 Mirage 2000-5 fighters from France. The total trade is worth almost \$6 billion (76). Finally, President Bush approved the sale to Taiwan of 150 F-16s.

### F-15 vs. Tornadoes

In 1986, Saudi Arabia asked the U.S. to sell F-15's, but Congress did not approve this sale. Then, Saudi Arabia spent \$29 billion to purchase 100 Tornadoes, 90 Hawks, 80 helicopters, with training and construction included. This sale created thousands of European jobs and damaged U.S arms market competition and lost U.S. jobs and regional influence (77). The advantages and disadvantages of this F-15 sale are shown in table2.

Table 2: The Analysis of F-15 Sales

Advantage	Disadvantage
<p>Economic Impact:</p> <ul style="list-style-type: none"><li>• \$13B Income Potential.</li><li>• Benefits Economy of 2070 F-15 suppliers in 46 States.</li><li>• 40,000 Near Term Aerospace Jobs.</li><li>• 350,000 Man Years of Employment.</li><li>• Tax Revenues of \$3B.</li><li>• Production Prevents Termination of F-15 Line.</li><li>• Maintains U.S. Aerospace Industrial Base.</li></ul> <p>Security Impact:</p> <ul style="list-style-type: none"><li>• Strengthen Saudi Arabian Self-Defense Capability.</li><li>• Reduce U.S. Defense Burden in Middle East.</li></ul>	<p>Economic Impact:</p> <ul style="list-style-type: none"><li>• Save Thousands of European Jobs.</li><li>• Strengthen European Competitiveness.</li><li>• Help UK, Germany, Italy Penetrate Middle East Market Further.</li><li>• Help Fund European Fighter Aircraft Development and Further Competition.</li><li>• Damage U.S. Economy/Balance of Trade.</li><li>• Save Tornado Production Line.</li></ul> <p>Security Impact:</p> <ul style="list-style-type: none"><li>• Loss U.S. Influence in Middle East.</li><li>• Close The Door and Relationships with Saudi Arabia.</li></ul>

Source: McDonnell Douglas Report to Congress

When we reviewed the former case of the above examples, we could synthesize the pros and cons of offset agreements for the U.S., the ROK, and the ROC as table 3,4.

Table 3: The Impact of Offset on Seller (U.S.)

Pros	Cons
<p>1. Political</p> <ul style="list-style-type: none"> <li>• Increase the political influence to the buyer.</li> <li>• Improve the relationship with allies and increase the integrated defense power, and reduce the defense burden for helping allies.</li> </ul> <p>2. Economic</p> <ul style="list-style-type: none"> <li>• Increase the opportunity of future business.</li> <li>• Balance the trade.</li> <li>• Open the overseas business and the new markets.</li> <li>• Increase the competitive capability and help survive in business.</li> </ul> <p>3. Technological</p> <ul style="list-style-type: none"> <li>• Get high technology from other countries (Japan, NATO).</li> </ul>	<p>1. Political</p> <ul style="list-style-type: none"> <li>• Become a complex situation in special areas such as middle East, and far East.</li> <li>• Affect the logistic support in the war period for producing parts in overseas.</li> </ul> <p>2. Economic</p> <ul style="list-style-type: none"> <li>• Lose jobs in domestic area.</li> <li>• Increase the potential competitors.</li> <li>• Lose the bids for small companies; they cannot afford the offset.</li> </ul> <p>3. Technological</p> <ul style="list-style-type: none"> <li>• Lose the state of the art technology.</li> <li>• Maybe the technology will pass through the enemies.</li> </ul>

Table 4: The Impact of Offset in Buyer (ROK, ROC)

Pros	Cons
<p>1. Political</p> <ul style="list-style-type: none"> <li>• Can improve the relationship and consolidate the common defense treaty with sellers.</li> </ul> <p>2. Economic</p> <ul style="list-style-type: none"> <li>• Balance the trade.</li> <li>• Can get some benefits back to reduce the burden to afford this business.</li> <li>• Improve the business circulation for barter or buyback.</li> <li>• Increase jobs in domestic economy.</li> </ul> <p>3. Technological</p> <ul style="list-style-type: none"> <li>• Acquire high technologies.</li> <li>• Become more competitive in the world.</li> </ul>	<p>1. Political</p> <ul style="list-style-type: none"> <li>• Easy for the seller to control the seller.</li> </ul> <p>2. Economic</p> <ul style="list-style-type: none"> <li>• Purchasing price may be higher than no offset price.</li> <li>• If no follow on buyback or license authority then will lose investment of facility, equipment.</li> </ul> <p>3. Technological</p> <ul style="list-style-type: none"> <li>• Only get out of date technology.</li> <li>• If national technological capacity very low cannot learn real high-tech.</li> </ul>

### Government Offset Policy

There are two different views about offsets. The recipient's view is that offsets are an integral part of the sale itself rather than unrelated compensation practices. The supplier's view is that offsets improve the overall value of the sale. These conflicting views are useful in understanding how governments establish offset policies.

The increasing use of offsets has motivated a lot of countries to set policies. The offset policies of the supplier, the United States, and the recipients, the ROK and the ROC will be discussed.

### US Government Policy

Because of competing group interests, supplier governments have difficulty in establishing an offset policy. Offsets for some defense industries are a nightmare that

never seems to end. For others, they are a very efficient way of getting business. Further complicating the setting of policy is the fact that it is very difficult to distinguish which industries have been successful in applying offsets as a marketing tool, because they do not like to share good or bad experiences with other competitors. These issues will be clarified by explaining the offset policy of the United States.

The U.S. government policy on offsets in military exports was initiated in 1978 in a memorandum issued by Deputy Secretary of Defense Charles Duncan. The memorandum indicated that there were inherent difficulties in negotiating and implementing compensatory coproduction and offset agreements. The memorandum also indicated that the U.S. contractors involved in an offset agreement must bear the total responsibility for fulfilling its conditions (17:1).

According to Dodenhoff, this offset policy statement resulted from numerous problems encountered in the offset agreement associated with the 1975 sale of Northrop F-5 aircraft to Switzerland. The US viewed the agreement as a "best efforts" attempt to promote Swiss goods while the Swiss considered it a guaranteed offset. Similar misunderstandings occurred with the 1975 sale of the General Dynamics F-16 to the European Participating Group. The policy in the Duncan Memorandum was adopted to avoid future misunderstandings. There has been a hands off policy by the Department of Defense towards offsets since 1978 (18:5).

The current public U.S. policy guide is the "U.S. Government Policy on Offsets in Military Exports." This policy is a result of the National Defense Authorization Act for Fiscal Year 1989, which required the President to establish a comprehensive defense trade offset policy (12:673).

The policy describes that the U.S. government views certain offsets to be economically inefficient and market distorting. The policy directs that certain principles should be followed to minimize the adverse effects of offsets, while not hampering U.S. firms' ability to compete for military export sales. This policy was issued on April 16, 1990, by the White House Press Secretary in the following statement.

“The President announced today his policy on offsets in military exports. This responds to the requirement under FY 1989 National Defense Authorization Act, Section 8925, 10 U.S.C. Sec. 2505.

The President stated that the United States Government is committed to the principles of free and fair trade. Consequently, the United States Government views certain offsets for military exports as economically inefficient and market distorting. Mindful of the need to minimize the adverse effects of offsets in military exports, while ensuring that the ability of U.S. firms to compete for military export sales is not undermined, the President has established the following policy:

No agency of the U.S. Government shall encourage, enter directly into, or commit U.S. firms to any offset arrangement in connection with the sale of defense goods or services to foreign governments. U.S. Government funds shall not be used to finance offsets in security assistance transactions except in accordance with currently established policies and procedures.

Nothing in this policy shall prevent agencies of the U.S. Government from fulfilling obligations incurred through international agreements entered into prior to the issuance of this policy. The decision whether to engage in offsets, and the responsibility for the negotiation and implementing offset arrangements, resides with the companies involved. Any exceptions to this policy must be approved by the President through the National Security Council. (19:46)

The President also noted that the time has come to consult with our friends and allies regarding the use of offsets in defense procurement. He has, therefore, directed the Secretary of Defense, in coordination with the Secretary of State, to lead an interagency team to consult with foreign nations with a view to

limiting the adverse effects of offsets on defense procurement. This interagency team will report periodically on the results of these consultations and forward any recommendations to the National Security Council." (13:67)

It was envisioned that the interagency team would include the Departments of Commerce, Labor, and Treasury, OMB, and the Office of the U.S. Trade Representative. The Congress subsequently incorporated this policy statement into law with an amendment to the National Defense Authorization Act (Pub. L. 102-558, Title I, § 124, 106 Stat. 4207) (13:68).

The statement goes on to say that there is a need now to begin bilateral discussions with major trading partners in an attempt to reduce government mandated offsets.

#### The Role of U.S. Organizations in Offsets

Most of the countries that purchase defense equipment from U.S. contractors require offset arrangements. The U.S. "hands-off" policy on offsets and offset relationships between a U.S. contractor and FMS or DCS country are depicted in the below Figure (34:276).

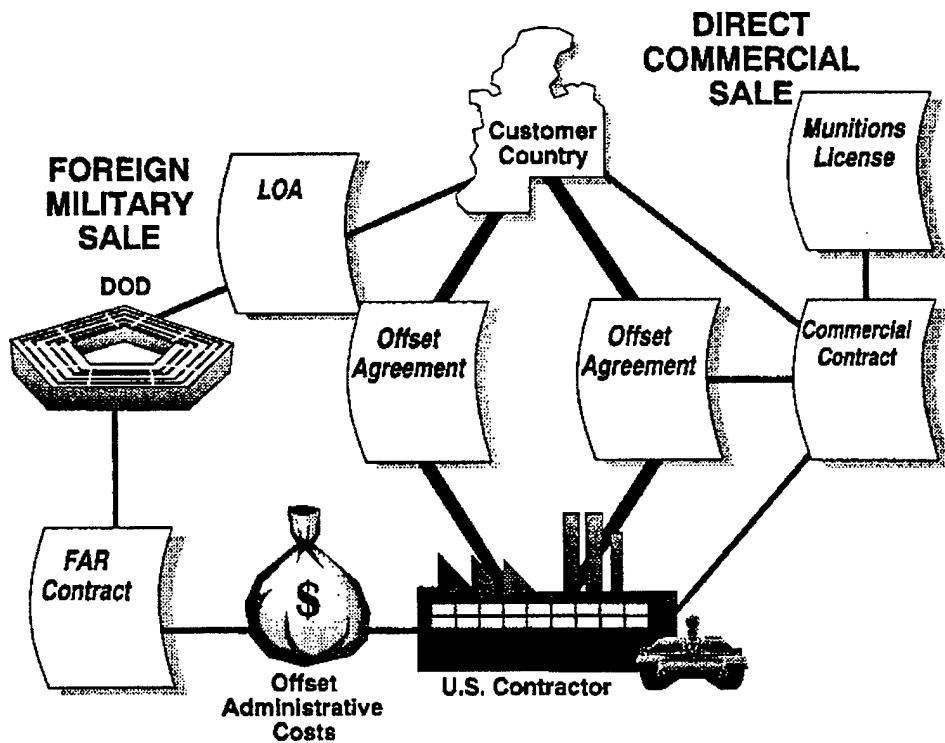


Figure 2:Offset Relationship

Even though U.S. government has a hands off policy for offsets, there are many organizations dedicated to controlling offset agreements. Congressional and Administration interest in offsets has significantly increased because of the concern about the U.S. balance of payments as well as concern the declining technological edge of U.S. industry and the loss of U.S. jobs (34:274). The U.S. is very concerned about technology transfer because most countries that are involved in offsets focus on technology transfer in order to boost their economies. Technology transfer highly influences the subcontractors as well as affects U.S. jobs in the long term because this will bring the new competition in the world.

Annual Offset Report Required by USC 50, app § 2099

The President is required to submit to Congress an annual report on the impact of offsets on defense preparedness, industrial competitiveness, employment, and U.S. trade. The Secretary of Commerce prepares the report in consultation with the Secretary of the Defense, the Secretary of the Treasury, the Secretary of State, and the U.S. Trade Representative (34:274).

Congressional Notification Requirements (Offsets)

The Foreign Relations Authorization Act requires Congressional notification of proposed FMS and commercial export sales to include “an item indicating whether any offset agreement” is proposed in connection with such sales [P.L. 103-236, § 732((a) and (b), 22 U.S.C. 2776 (b)(1) and (c) (1).] In addition, the law states that “the President shall, upon request” of the Committee on International Relations of the House of Representatives, transmit to the committee, “to the extent specified in such request, the name of each contractor expected to provide the defense article, defense service, or design and construction service proposed to be sold and a description from such contractor of any offset agreements proposed to be entered into in connection with such sale....” [22 U.S.C. 2776 §(b)(1)(c)]. The President, if requested, must submit the report before such Letter of Offer and Acceptance(LOA) is issued.

U.S. Firms Are Obligated to Report Offsets to Department of Commerce

Under its final rule issued 23 December 1994, the Department of Commerce, Bureau of Export Administration, requires U.S. firms entering into offset agreements

connected to sales of defense products or services to foreign governments or companies, to report certain information to the Bureau when such offset agreements are over \$5 million in value (59 Fed.Reg. 61796(1994)). This applies to both FMS and DCS, starting with all offset arrangements completed since January 1, 1993, involving an offset credit of \$250,000 or more claimed by a foreign representative. After the initial report, reports must be made annually before the 15th June for the preceding calendar year. The reports must include a contact, itemized list of offset transactions, country involved, weapon system/services, the entity satisfying the offset and recipient of offset, offset credit dollar value, actual offset dollar value, and a description of the offset. The Bureau will not publicly disclose, but will summarize all submitted information in an annual report to Congress.

#### Role of the Defense Security Assistance Agency (DSAA)

Technology transfer is usually the hot issue in the offset agreement. Recipients want to receive more high technology, however the supplier, United States, wants to consider that carefully because of increasing global competition and impacting on the U.S. industry. As Joel Johnson of the Aerospace Industries Association put it, "In terms of technology transfer, there is nothing going on in this deal that has not gone on with a dozen other countries over the past seven to eight years."(5:23). DSAA controls the technology transfer in the many ways. Defense industry needs permission from DSAA when they transfer the technology related to the military. For example, in the classified report on the F/A-18 program, GAO suggested that DSAA strengthen MOU provisions regarding third-party transfers and verification of quantities of Korean Fighter Program

items produced in Korea and their disposition. DSAA did improve the provision on verifying production quantities and made a change to strengthen the third-party transfer provision (5:27).

#### Role of the Defense Technology Security Agency (DTSA)

Within DOD, the Office of Under Secretary of Defense is the focal point for technology transfer policies, and the Defense Technology Security Administration (DTSA) is the implementing agency. For example, in April 1991, because of concerns about the technology transfer in the KFP, the Defense Technology Security Agency (DTSA) requested that the F-16 System Program Office issue a report comparing the level of technology transfer for the KFP and FSX.

DTSA was established in 1985. The unification of the Office of the Secretary of Defense's export control effort under DTSA enabled DOD to develop a more coherent technology security program and more efficient DOD-wide procedures for reviewing export licenses. DTSA's responsibilities include:

Administering the DOD Technology Security Program by ensuring that defense related transfers are consistent with U.S. foreign policy and national security objectives. DTSA is the primary DOD agency for technology security policy and implementation;

Reviewing DOD opinions on commercial munitions license applications and commodity jurisdictions and provides a single DOD position to the Department of State Office of Defense Trade Controls;

Participating in the USG efforts to counter the proliferation of weapons of mass destruction (WMD). WMD are nuclear, chemical, and biological weapons and systems to deliver them and are considered one of the most serious threats to the security of the U.S;

Participating in counter proliferation regimes such as the Missile Technology Control Regime (MTCR) and the former Coordination Committee for Multilateral Export Controls (COCOM). (34:486)

The General Accounting Office (GAO)

The main activities of the GAO are its audits and evaluations of the US Government programs and activities, conducted in response to requests from congress, its committees, Members, and Staffs. The GAO evaluated many offset programs and submitted the result to the Congress. The GAO is under the control and direction of the Comptroller General of the United States who is appointed by the President with the advice and consent of the Senate for a term of 15 years. The audit authority of the GAO extends to all departments and other agencies of the Federal Government. Among other functions the GAO also has statutory authority to prescribe accounting principles and standards, and settle claims by and against the United States (34:79).

The introduction of McDonnell Douglas offset policy

In the McDonnell Douglas, the Industrial Participation Group of MDA has the responsibility to develop and implement the offset programs. MDA uses a systematized process to develop and implement an offset project. This process differs depending on the type of project: technology transfer, direct investment, project financing, export development, co-production, etc. The process for a typical technology transfer project is shown in the below.

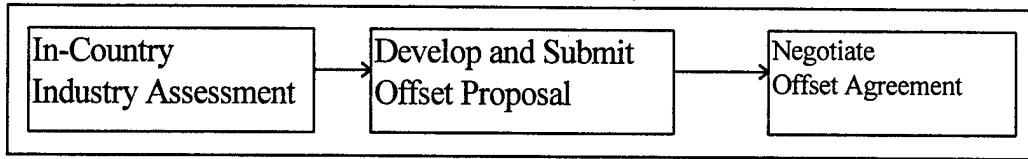


Figure 3: In the pre-contract award activities

In the pre-contract award activities, first of all company need to assess in-country industry. Next, they develop and submit an offset proposal. Then, they negotiate the offset agreement.

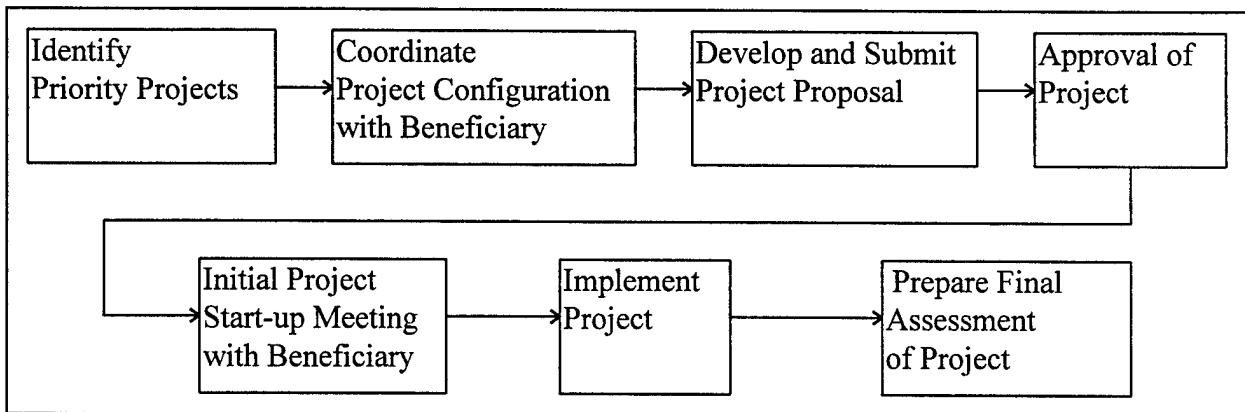


Figure 4: In the post-contract award activities

In the post-contract award activities, first of all, they identify the priority projects. Second, the company coordinates the project configuration with the beneficiary and develops and submits the project proposal. After approval of project, there is a start-up meeting with the beneficiary for the initial project. Finally they implement the project and prepare the final assessment of the project (109).

The company has a different perspective about the offset. Here is summary with the interview with McDonnell Douglas. In the McDonnell Douglas perspective on offset, offset is required condition for international sales. Most frequently offset is the

discriminator between competing companies. The major benefit resulting from an effective offset program is enhanced sales. If the US government restricts, limits, or otherwise hinders offset activities, it will prevent the US companies from competing on the international market and will result in severe unemployment in the US aerospace industry (109).

When they select the technology transfer for offset projects, they consider three factors. The first and foremost consideration is the current export license restrictions and requirements on any given technology. Before a proposal is officially submitted, an evaluation of the export restrictions is made to verify that the particular technology can be exported. Most frequently the technology in question is dual-purpose, that is, it can apply to both industrial and aerospace applications. Seldom does it occur that a technology is aerospace-specific. The second consideration relates to the particular needs of the beneficiary of the technology. For direct aerospace manufacturing activities, the typical of transfer includes mature processes that do not impact, in any way, the MDA industrial base. They also consider the volume and cost of a particular part and the impact on our manufacturing base if sources outside (109).

In many countries offset projects are only for the benefit of government-related organizations or defense-oriented companies. This severely limits our ability to meet our offset commitments because it limits the types of projects that we can provide. When countries require a high percentage of direct offset, the lack of indigenous capabilities, people and facility resources, investment requirements, and other cost-affecting factors all make the job of implementing offset projects significantly more difficult (109).

## Conclusion

This chapter has discussed the world arms market and offset development process and government policy. Now offsets have become common in world trade. In Middle East, countries are looking for diversity in economics rather than building or maintaining the defense industry. Pacific Rim countries such as Taiwan, Korea, Singapore are seeking for technology transfer in aircraft design to compete in the world aerospace market. Europeans seem to be maintaining the status of their defense industries (51:5-56). We will follow this research and discuss about how to create effective offset organizations and establish the processes in the Republic of China (Taiwan) and the Republic of South Korea. Finally, some firms report in BXA survey reports that they have to give up something in the offset process; in return they have gained market share (51:65). Just as Weida says, if technology is transferred at the right time, your gains will be greater than your losses (67:143). Schaffer suggests that firms try to transfer technology only if they believe it will be obsolete in two or three years (71:35). Offsets will remain an integral part of the world-wide arms trade. Firms and countries have different offset policies which depend on their requirements and conditions. We believe offsets should be a win-win policy.

### III. The Korean Offset Policy and The Korean Fighter Program

#### Chapter Overview

This chapter provides a comprehensive case study of the Korean Fighter Program (KFP) and its offsets. It begins with background information about South Korea. This background information will include its history of defense procurement from the U.S., the related offsets and the efforts to develop its own defense industry. This discussion will include a background of the companies, their offset policies and practices, the aircraft being offered for sale under the program, and the selection process. This final section will include a description of the U.S. and ROK government participation, the offset proposals submitted for the program, the original decision made by the ROK and the subsequent reevaluation and reversal of the decision.

#### Background

The Korean peninsula is located in northeast Asia and is surrounded by the East Sea, the Yellow Sea, China, Russia, and Japan. Over 70% of the peninsula is mountainous. The Korean have developed into a highly homogeneous people. Its population is around 65 million. Koreans all speak and write the same language, which has been an important factor in their strong national identity. Modern Korean has several different dialects including the standard one used in Seoul and central areas, but they are similar enough that speakers do not have trouble understanding each other.

In the seventh century Shilla unified Korea by absorbing its neighbors, Koruryo and Paekche. For the next 13 centuries Korea was ruled by a single government. During

the unified Shilla period, the peninsula experienced a cultural golden age, especially in Buddhist art.

Koryo Dynasty (A.D 918-1392) established an aristocratic ruling government. The name “Korea” derived from the name “Koryo”. The Choson Dynasty (1392-1910) adopted Confucianism as the state ideology, and instituted political and economic reforms.

As a result of the cold war power game following World War II, the nation was divided by a tightly guarded Military Demarcation Line, which still remains an international concern. The Korean War (1950-53) was a tragic experience for the entire Korean people, who have long been a homogeneous nation speaking one language and sharing the same traditional culture.

After the war, South Korea made tireless efforts to reconstruct the nation toward prosperity and stability. During the past three decades, Koreans have achieved miraculous economic growth. They have made strong efforts to build a mature, democratic state guaranteeing public welfare by carefully incorporating modern western ideologies into their own political concepts and traditions. Symbolizing the success of these efforts, the 1988 Seoul Olympic Games, the 1993 Taejon Expo and 1996 Seoul Air Show demonstrated the dynamism of the nation’s modern development and its rapid progress toward becoming an advanced industrial nation.

## The Constitution and Government of South Korea

The South Korea has a democratic form of government based upon the separation of powers and a system of checks and balances. In order to protect freedoms and rights to the maximum extent, the constitution also provides for the independence of the three branches of the government: the executive, the legislation and the judiciary. The constitution of the South Korea prescribes a presidential system for the executive branch of the government. Personal liberty is fully guaranteed for all citizens, as are the freedoms of speech, the press, assembly and association. The constitution calls for free competition in presidential elections and limits presidential tenure to a single five-year term.

Legislative power is vested in the National Assembly, a unicameral body. Two-thirds of the numbers of the National Assembly are elected by popular vote for a term of four years and the remaining seats are distributed proportionately among parties winning five seats or more in the direct election. The total number of Assembly members provided by the constitution is no less than 200, with the exact number determined by statute. Major functions of the National Assembly include the power to propose, deliberate and approve or reject legislative bills, to finalize and inspect closing accounts of the national budget and to consent to the conclusion and ratification of treaties.

The highest tribunal in the country, the Supreme Court examines and passes final decisions on appeals of the decisions of appellate courts in civil and criminal cases. Its decisions are final and indisputable, forming judicial precedents. The Chief Justice is appointed by the President to a single six-year term with the consent of the National

Assembly, and the justices of the Supreme Court are appointed by the President on the recommendation of the Chief Justice.

Standing at the apex of the executive branch of government, the President functions not only as head of state in domestic affairs but also represents the state in foreign relations. He is chairman of the state council and has the power to appoint and dismiss the Prime Minister, cabinet ministers as well as other senior officials including heads of government agencies and office and ambassadors. He serves as commander in-chief of the armed forces. The President performs his executive function through the State Council which is made up of 15 to 30 members and is presided over by the President, who is solely responsible for deciding all important government policies

#### The Relationship with North Korea

Both the ROK and the DPRK have always longed for a unified Korean peninsula. During the Cold War, the US and the USSR played important role to gain control of the peninsula for their own political ideologies. After Cold War, this outside influence over the conflict has lessened significantly. However, the fact remains, as stated by US Secretary of State James Baker, “ the heavily armed standoff on the Korean peninsula is still one of the world’s most dangerous flash points, a confrontation now intensified by the ominous threat of nuclear proliferation” (35:3).

The ROK has become an economic successes, on the other hand the DPRK could not make economic success in the current points. In the past decades, the ROK has made a great efforts to peacefully reunify the Korea peninsula. Toward this effort, in 1970 the ROK met with the DPRK and some agreements were made. The ROK has supported the

DPRK with food assistance since the 1980s. In December 1991, the two countries signed two important bilateral agreements. The first is a non-aggression pact and the second is a nuclear nonproliferation pact (36:37 and 37:275). However, the DPRK have been digging tunnels to attack ROK since the 1970s, and, in November 1996, sent an armed force in a submarine to spy on the ROK. The DPRK has not given up their desire to reunify Korea by force since the Korean War.

In fact, reunification is a real possibility. The ROK and the DPRK contend that the differences between the two countries are superficial and can be overcome by thousands of years of collective cultural and national heritage. Both countries also have been closely studying the events in Europe surrounding the reunification of Germany with the hopes of learning from the German experience (38:126-127).

Reunification could create a very powerful nation. A unified Korea would have a population of over 65 million, a huge military, and a very strong economy. Reunification would cost an estimated \$10 billion dollars over 10 years, but would result in an estimated annual savings of \$7 billion per year in reduced defense expenditures (39:132). If this situation were to occur, the Korea Institute for Economics and Technology estimates direct bilateral trade of over \$1 billion in the first year, reaching up to \$10 billion per year by the end of this decade (39:131).

#### The Relationship with the U.S.

Since the Korean War, the US has had a good relationship with the ROK. The US and the ROK signed a mutual defense agreement in 1953 (41:162). The Carter administration announced its intention to reduce the forces deployed there and withdrew

some of the US military from the ROK at the end of the 1970s. Because of U.S. budget cuts and the lessening of tensions due to the end of the Cold War, the US announced further reductions in the forces deployed. The US still has approximately 37,000 military personnel, Second Division of the US Army and 7<sup>th</sup> US Air Force, in the ROK to maintain peace and the balance of military power. The ROK has already started shouldering more of the burden of defense. The US does not plan to completely withdraw its forces from the ROK until the threat from the DPRK no longer exists(49:111).

United States-ROK trade relationships are defined in the Treaty of Friendship, Commerce, and Navigation, which was signed on November 28, 1956. In this treaty, both nations agree to extend to each other “national treatment” and “most favored nation” privileges (43:40-41). “National treatment” specifies that each country will “treat foreign participants in its economy just as it treats domestic companies” (3:59).

The ROK currently ranks with Australia, Japan and Taiwan as a leading market for U.S. exports of arms and military-related equipment”(45:132). The U.S. willingness in the past to extend aid and transfer technology was partly due to the ROK’s “direct assistance to the U.S. war effort in Vietnam and its long-standing importance in U.S. containment strategy in Asia (5:25).

Before 1984, offsets were not mandatory in the ROK. The official ROK position on offsets is to require a minimum of 50 percent in offsets for major purchases of foreign weapons and systems. Since about 1987, though, Korea has unofficially required only 30 percent offsets for purchases from American defense contractors(3:60).

Since the early 1970s, the majority of ROK requests for licenses to manufacture or coproduce U.S.- designed weapons have been approved. Major past ROK defense purchases from the U.S. which have included offsets in the form of either coproduction or licensed production of U.S. designed and developed weapon systems include:

1. The assembly of F-5E and F-5F aircraft by an affiliate of Korean Air in collaboration with Northrop;
2. The assembly of MD 500 helicopters by an affiliate of Korean Air in collaboration with McDonnell Douglas;
3. The assembly of the 5.56mm Colt M-16 rifle by the State Arsenal in Pusan, South Korea;
4. Coproduction of the M16A1 Vulcan antiaircraft gun between the Daewoo Corp, and General Electric; and
5. Assembly of the U.S. 155mm and 105mm howitzers by Kia Machine Tool Corp. (45:132).

#### The Development of ROK's Defense Industry

After the Korean War, a mutual alliance agreement was signed between the ROK and the US. So the US supported the ROK with arms and food. At the time, there was not much of a defense industry in the ROK. Since then the ROK has begun a major program to modernize its armed forces and to develop an industrial base. They are planning the development of an indigenous trainer and a light transport and developing a helicopter design capability.

The ROK defense industry is dominated by a few large corporations which manufacture most of the weapons produced in South Korea with many smaller companies acting as subcontractors. The most well-known of the companies include Samsung, Daewoo, Hyundai, and Lucky Goldstar. The South Korean defense industry currently comprises 58 firms, 8 firms with annual revenues greater than a billion dollars and 19 firms with annual revenues less than billion dollars and many small companies (43:33).

The ROK government is closely involved with the production of weapons by these firms and gives special treatment to them. This special treatment includes low interest rate loans, elimination of tariffs and quotas on imports of production items, and so on. Research and development for weapons is carried out by the Agency for Defense Development (ADD) with the companies producing prototypes based on ADD designs. ADD is also responsible for planning, facilitating, and quality control of the ROK defense industry (3:63).

ROK plans are to build a defense industry which is geared toward both domestic and export needs and is integrated with their overall economic strategies. The overall economic development strategy includes plans for development of a commercial aerospace industry. In May 1985, ROK established an Aerospace Industry Development Committee to promote and guide the development of Korea's aerospace industry. (28:5)

The Republic of Korea Air Force (ROKAF) has been the driving force behind the modernization of the armed forces. ROKAF 2000, the air force's long-range modernization plan "calls for the production of several generations of fighters leading up to an entirely indigenous Korean fighter by the year 2004" (5:20).

## Offsets of the Republic of Korea

### Introduction

South Korea wants to have advanced technologies by using offsets for its defense and commercial industry. To develop its aerospace industry, South Korea has given high priority to technology transfer and related training. South Korea grants multipliers and awards offset credit to obtain technology transfer and training even though that exceeds the actual cost to the company of providing these items (7: 27).

In the early 1980s, South Korea's policy required an offset of 50 percent or higher on defense purchases exceeding \$2 million and it required at least 20 percent for direct offset (14:73). However, in the late 1980s, South Korea's policy changed from 50 percent to 30 percent offset or higher on defense purchases exceeding \$5 million (10:8).

The direct offsets which are related to defense are preferred by South Korea (10:8). South Korea also can accept a wide variety of indirect offsets to help develop its industry, especially its aerospace industry. In addition, South Korea wants to export products, such as forklifts and printing press parts, that were unrelated to the weapon system being purchased. So, South Korea frequently has required U.S. contractors to buy the products (7:28).

Several U.S. companies indicated that it can be difficult to work with South Korea. It is not easy to satisfy the offset requirements of South Korea. South Korea has well-developed offset regulations based on its experience. They noted that the 30 percent offset requirement is tougher to satisfy than the old 50 percent requirement and can be as tough as a 100 percent requirement. Several company officials also noted that they have

had difficulty in not being allowed to use banked credits which companies can earn extra offset credit under one offset agreement and save or bank those credits to satisfy a later offset obligation (7:19). However, some contractors commented that South Korea was consistent in its requirements and would negotiate if the U.S. company was trying to meet its offset obligation (7: 28).

#### Definition of Terminology

Listed below are definition of terminology as outlined in the Korean Defense Offset Program Guide lines (Jan, 1992) (10:7).

**Memorandum of Agreement (MOA)** : MOA is a document detailing obligations and understandings necessary for the execution of the offset program between the Defense Logistics Agency (DLA) and the foreign contractor involved.

**Offset Proposal** : This is a document in which the foreign contractor outlines its plan for executing the offset programs. It consists of an agreement outline drawn up to recommend a Korean Industry Participation (KIP) and a more detailed proposal.

**Subcontract Production under a Korean Industry Participation (KIP)** : This is production of selected parts and components by a domestic company through technology transferred by the foreign contractor.

**Subcontract/Technical Assistance Agreement (TAA)** : This is a subcontract or a technology transfer agreement between the foreign contractor and the domestic company involved which is drawn up for the purpose of offset obligations and fulfillment

**Offset Requirements** : These are documents requested by Ministry National Defense (MND) regarding the ranges of offset programs and the extent of parts and components to be produced domestically, through technology transfer by the foreign contractor

**Memorandum of Understanding (MOU)** : This is a document specifying the rights and obligations between the foreign contractor and the domestic company regarding the offset program.

**Banking of offset credits** : This is the value of KIP products exceeding offset obligation values within the performance period as specified in MOA, which the foreign

contractor may apply to its future offset program, with the prior approval of MND.

**Effective date of MOA :** This will be valid from the date of the last to occur between effective date of main contract and signing of the offset MOA by both parties.

**Request For Proposal (RFP) :** This is a document issued by DLA to foreign contractors requesting their offset proposals.

**Main Contract :** This is a basic contract signed to procure military equipment, which is the basis for offset obligations. The terms of this contract is extended to apply to details and contingencies not specified in the MOA.

**Foreign Purchase :** This is a form of weapon systems acquisition process and direct purchasing from abroad either in complete systems or in parts, to assemble them domestically. This can be categorized into FMS purchasing and commercial purchasing, according to the purchasing sources.

**Selection of Weapon Systems :** This is a procedure of selecting particular weapon systems to be procured through either license production or foreign purchasing. The criteria of this selection procedure are Required Operational Capabilities (ROC), offset conditions, follow-up logistics support and the terms and conditions of the contract.

**Organization for Economic Cooperation and Development (OECD) :** This is an organization for economic cooperation and development of the advanced nations, which publishes monthly Main Economic Indicators.

**Offset Value and Actual Value :** Offset value is the value obtained on the basis of the proposal for offset programs made by the foreign contractor which is evaluated in accordance with the value assessment standards, set forward in this MOA. The actual value is the price actually required in clinching the transactions.

**Aerospace Industry Development Program (AIDP) :** AIDP is a specific proposal made by a foreign contractor regarding the extent of aid and support it is prepared to provide to the Korean aerospace industry involved in the KFP program. This terminology is applied in all contracts involving aerospace technologies.

**The purpose of offset program :** The purpose of an offset program in South Korea is to prepare and develop the basic defense industry. First of all, offsets make it possible for South Korea to initially contact with foreign contractors. Second, this provides KIP with the capability to produce and assemble parts. Third, offset enhances the ability of

logistics support by producing parts by itself and also enhance the substitute effect for the import. This can bring the ability to export parts and also can increase jobs in KIP. In the future, the capability of the development weapon system can be increased (15:221).

The following are emphasized in the direct offset, according to the Korean Defense Offset Program Guidelines.

- (1) Acquisition of key advanced high technologies required for the defense industry's R&D and production
- (2) Enhancing the capability of depot maintenance
- (3) Acquiring facilities, test equipment and tools for domestic manufacture of military hardware.
- (4) Increasing opportunities to participate in R&D projects.
- (5) Providing opportunities to repair and overhaul foreign military equipment
- (6) Improving techniques for cost and effectiveness analyses of weapon systems.
- (7) Others of national interest

The followings are emphasized in the case that are not related to military materials to be procured, according to the Korean Defense Offset Program Guidelines.

- (8) Same as (1) to (6) in the direct offset.
- (9) Acquisition of major advanced technologies
- (10) Export of defense related products
- (11) Increasing opportunities to participate in major developing projects
- (12) Others of national interests

## The Basic Policies for Offsets

The basic policies for offsets are described in this section according to the Korean Defense Offset Program Guidelines(10:8).

- (1) In principle, an offset program applies to any of the government's high-value military procurements involving foreign exchanges exceeding \$5 million.
- (2) Ministry of National Defense (MND) may take into account general conditions of the offset programs in its policies regarding procurement of foreign military equipment and materials.
- (3) The goal of the offset program will be at least thirty (30) percent of the total contract value, with emphasis placed on direct offsets.
- (4) The offset program shall not be a factor in determining prices.
- (5) The offset program will be considered on a competitive basis. The results of evaluation of the proposed offset programs will be an important factor in the selection of the final contractor.
- (6) All parties involved in offset program shall mutually cooperate in order to maximize the effects of offset program.
- (7) The priority of offset program shall lie in acquiring advanced technologies.
- (8) Upon signing, offset memorandum of agreement (MOA) will be attached to the main contract document as part of the main contract.

(9) Any main contract without the finalized offset MOA shall not be presented to the acquisition committee for foreign contractor selection and also the review board of the force improvement plans.

#### The Role of Organization for Offset

In the offset program, many organizations are involved. The main organizations and their roles in the South Korea are in the following. The task of each organization for offset are follow

##### 1. Acquisition and Development Bureau in MND

- Develop regulations and planning policy for offsets
- Make decision concerning offset programs
- Plan basic guide-lines for offsets
- Recommend the selection of KIP
- Approve and discuss the results of offset negotiation.
- Review the offset progress report
- For the offset, control and coordinate DLA, ADD, and so on.

##### 2. Program Management Office in MND

- Submit and review the offset guideline
- Include the offset project when the weapon is selected.

##### 3. Military Services (Army, Navy, Air Force, and Marine)

- Report the data for offset projects
- Report the data for offset negotiations
- Include the offset projects in the recommendation for the approval of

the acquisition programs

- Report the results of the technology tests and the pre-contract proposals to the offset office
- Report the data of offset performance to the offset office.

**4. Defense Logistics Agency (DLA)**

- Request offset proposals from foreign contractors
- Recommend the selection of KIP for offset
- Sign and negotiate the offset agreement
- Report and notify the results of the offset agreements and include the results in the basic contract document.
- Plans for the performance of offset
- Review and receive the report of the offset performance and report that to MND
- Keep the record of the offset performance and technology received
- Check the offset performance and management offset in the long term

**5. Agency for Defense Development (ADD)**

- Prepare technology requirement in middle and long term.
- Report the data of the offset projects
- Report the data of the offset negotiations
- Review the technology from the offset
- Acquire, manage, and use of technology data

## **6. Committee for Offset Evaluation in DPA**

- Chair the working level committee for offset evaluation which consists of officials in charge.
- Decide whether or not MOA complies with the regulations
- Decide whether or not the classifications of the offset contents comply with the standards.
- Determine whether or not the acknowledgment of the offset value complies with the standards.
- Review whether or not the offset evaluation method has any errors.
- Determine whether or not the ability of offset proposals can be put in force
- Decide whether or not the performance report is correct
- Determine whether or not the evaluation is fair and reasonable

## **The Offset Procedures**

After making decision about the method of a weapon acquisition, if the acquisition requires the offset programs based on the offset policy, the Acquisition and Planning Bureau in MND prepares the general offset guideline with the recommendation from Army, Air Force, Navy, Marines, ADD, and the agencies related to the offset program. DLA negotiates and performs the offset program based on the general offset guideline. The offset procedures depend on the acquisition methods. The direct purchase from overseas and licensed production will be discussed in this paper.

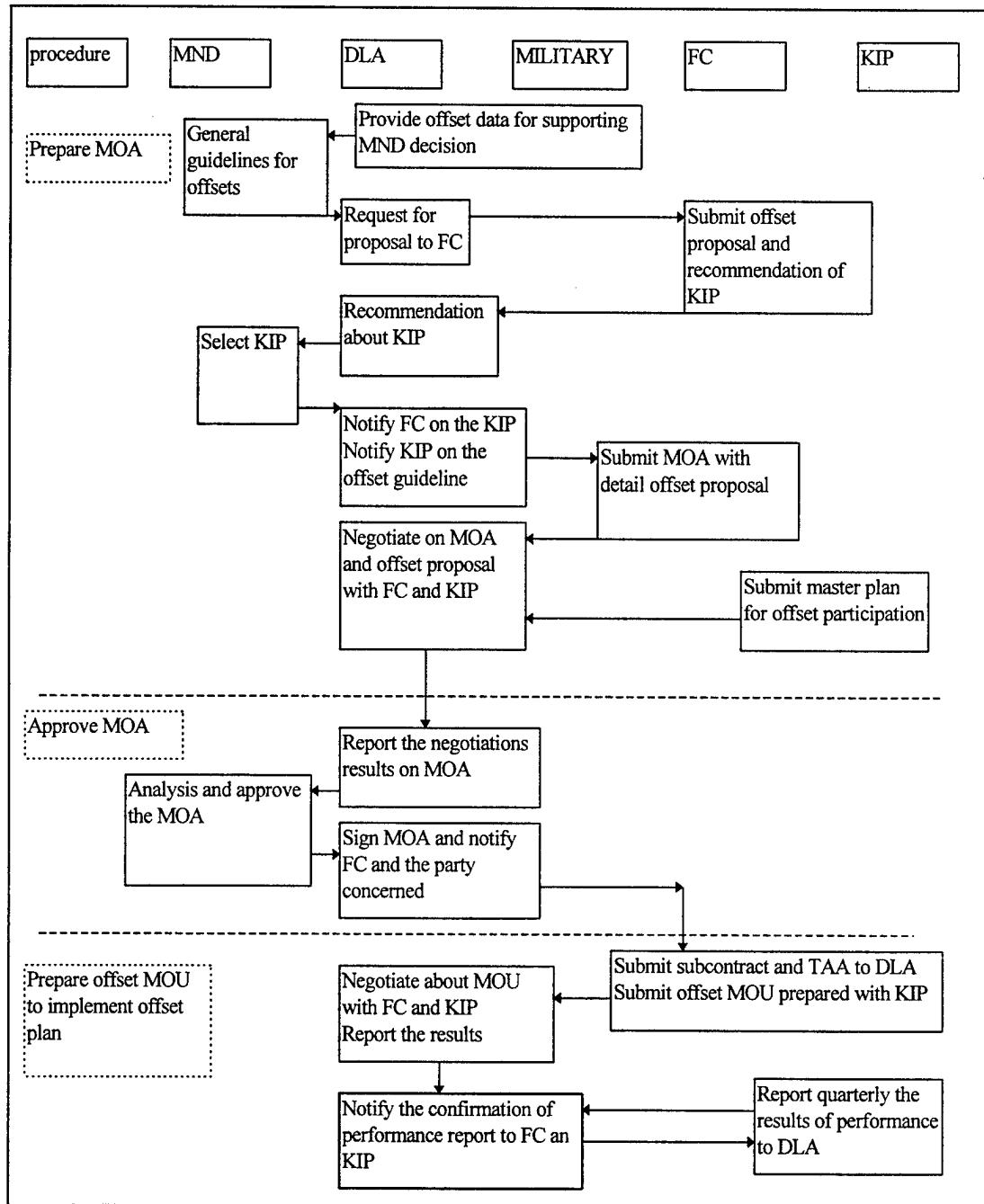


Figure 5: Offset Procedure

#### Direct purchase from overseas

In the direct purchase from overseas, three phases are to be described in order to perform the offset agreement. In the first phase, MND provides DLA with master plan for offset program and general guidelines for MND's offset requirement. Next, upon

receiving the “Master Plan for Offset Program” from MND, DLA issues Request for Proposal (RFP) together with MND’s offset requirements to foreign contractors (FC). The contents included in the RFP are point of contact, submission date, and Korean defense offset program guidelines. Third, FC submits an outline of offset proposal, point of contact, and recommendation of domestic company. Fourth, DLA reports this to the MND. Last, KIP selection is made by the MND based on their evaluation of the capabilities of domestic companies, upon receiving a recommendation from DLA. The DLA’s recommendation to the MND is based on their evaluation of offset proposal and recommendations of domestic companies submitted by the foreign contractor.

In the second phase, DLA notifies FC of the domestic company selected by MND and notifies selected domestic company of MND’s offset requirements and outline of offset proposal. Next, FC surveys domestic company selected by MND and submits following for negotiations: MOA with detailed offset proposal, one copy of main contract quotation, and desirable dates for negotiations. Third, KIP submits master plan for offset participation to DLA and a positive participation of the selected domestic company during the negotiations between DLA and the FC is required. Fourth, FC, DLA, and KIP negotiate on MOA and offset proposal. Fifth, FC submits MOU made between foreign contractor and domestic company to DLA. Lastly, upon receipt of detailed offset proposal and MOA, DLA review according to the following criteria: basic policies governing offset programs, MND’s offset requirements, standard format, reasonableness of items, quantity, price and execution period and other performance conditions, technical efficiency, the attached MOU with a Korean company, whether the items that should be incorporated in the main contract are included or not, and whether or not there is any

provision violating the existing laws or regulations. DLA reports the results of negotiations to working level committee for offset evaluation and reports to MND the evaluation results with initialed MOA attached proposal and MOU

In the third phase, the technical importance, the total dollar values and the period of offset performance are major factors in the evaluation process. First, MND analyzes the evaluation results with regard to selection of equipment and approves the MOA. Second, DLA signs MOA and notifies FC and the party concerned. Third, FC submits subcontract and Technical Assistance Agreement (TAA) to DLA. Next, FC, KIP and end user (military) report quarterly the results of performance to DLA. At last, DLA notifies the confirmation of performance report to FC and KIP. All above is summarized in the following table.

Table 5 : In the direct purchase from overseas

SEQ	Supervision	Contents
1	MND	Provides to DLA Master Plan for Offset Program and general guidelines for MND's offset requirements
2	DLA	Issues request for proposal (RFP) to foreign contractors
3	Foreign Contractor (FC)	Submits an outline of offset proposal and recommendation of domestic company
4	DLA	Notifies foreign contractor of the domestic company selected by MND upon DLA's recommendation Notifies selected domestic company of MND's offset requirements and outline of offset proposal
5	FC	Surveys domestic company selected by MND and submits following for negotiations 1) MOA with detailed offset proposal

		2) One copy of main contract quotation 3) Desirable dates for negotiations
6	Korea Industry Participation (KIP)	Submits master plan for offset participation to DLA
7	DLA/KIP/FC	Negotiate on MOA and offset proposal
8	FC	Submits MOU made between foreign contractor and domestic company to DLA
9	DLA	Reports the results of negotiations to working level committee for offset evaluation Reports to MND the evaluation results with initialed MOA attached proposal and MOU
10	MND	Analyzes the evaluation results with regard to selection of equipment and approve the MOA
11	DLA	Signs MOA and notifies foreign contractor and the party concerned.
12	FC	Submits Subcontract/Technical Assistance Agreement (TAA) to DLA
13	FC/KIP/End-user	Reports quarterly the results of performance to DLA
14	DLA	Notifies the confirmation of performance report to foreign contractor and domestic company

#### Licensed Production

In the direct purchase from overseas, three phases are to be described in order to perform the offset agreement. In the first phase, MND provides offset projection of licensed production with selected domestic company to DLA. Next, DLA issues RFP to FC and provides general guidelines for negotiation with MND's offset requirements to domestic company. Third, FC submits a detailed proposal and MOA to DLA. Finally,

KIP shall report the results of negotiation with a plan of license production after negotiating with foreign contractor about delegated matters.

In the second phase, DLA and FC negotiate and modify the result of KIP's negotiations. Next, KIP submits MOU and subcontract made between foreign contractor and domestic company to DLA. Third, DLA reports the results of negotiation to working level committee for offset evaluation and reports the evaluation results with initialed MOA and proposal.

In the third phase, MND analyzes the results of evaluation and approves the MOA. Next, DLA signs MOA and notifies FC and the party concerned. FC and KIP report quarterly the results of performance to DLA. At last, DLA notifies the confirmation of performance reports to foreign contractor and domestic company. All above is summarized the following table.

Table 6: Licensed Production

SEQ	Supervision	Contents
1	MND	Provides offset project of licensed production with selected domestic company to DLA
2	DLA	Issues RFP to foreign contractor Provides general guidelines for negotiation with MND'S offset requirements to domestic company
3	FC	Submits a detailed proposal and MOA to DLA
4	KIP	After negotiating with foreign contractor about delegated matters, domestic company shall report the results of negotiation with a plan of licensed production
5	DLA/FC	Negotiate and modify the result of KIP's negotiations
6	KIP	Submits MOU and subcontract made between foreign contractor

		and domestic company to DLA
7	DLA	Reports the results of negotiation to working level committee for offset evaluation  Reports the evaluation results with initialed MOA and proposal
8	MND	Analyzes the results of evaluation and approve the MOA
9	DLA	Signs MOA and notifies foreign contractors and the party concerned
10	FC/KIP	Report quarterly the results of performance to DLA
11	DLA	Notifies the confirmation of performance reports to foreign contractor and domestic company

## The Case of the Korea Fighter Program (KFP)

### The Selection Process

Background In the early 1980s, the Republic of Korea initiated the program known as the FX which is for the purchase of 120 fighter aircraft. The FX program represented the first phase in the ROKAF 2000 plan that is geared toward increasing the service's capabilities by the turn of the century. The Korean government wanted to use the FX program as a springboard to develop the nation's aerospace industry (23:195). The plan is seen as a step toward creating an aerospace industrial infrastructure that can support an autonomous national defense (23:191). The next phase in the ROKAF 2000 plan is development of "an advanced technology, multi-role fighter- the FXX-also to be produced in Korea between 1998 and 2003" (38:199). The final phase in the plan is the development of a completely indigenous fighter-the FXXX-based on an indigenous Korean design by 2004.

For the successful first step, the South Korea government planned the Aerospace Industry Development Program (AIDP) (46:127) to develop the aerospace industry. In 1984, the aerospace industry development committee was established, composed of ministers of several ministries such as Ministry of Finance and Economy (MFE), Ministry of National Defense (MND), Ministry of Trade Industry and Energy (MTIE) and Ministry of Science and Technology (MST). The Minister of Trade Industry and Energy was assigned as a chief of the committee. In order to support this committee, the

executive committee also was established with working level members who represent each Ministry or Agency. This committee made main decisions for KFP and offset projects. In order to make decisions about the main and offset projects, first of all, each ministry got the information from his agency such as defense industry, ADD, KIDA, and each service. Next, each ministry evaluated its projects and submitted them to the committee. The committee had several meeting to evaluate which projects are good for the whole country's industry in the future and made final decisions about the KFP and offset projects. The committee selected licensed production instead of a straight sale of off-the-shelf aircraft in order to develop aerospace industry. Through the KFP offset, South Korea wanted to improve the design capability of the advanced training aircraft. In 1989, the committee also made decision producing the KTX-2 development projects to perform the design capability which was obtained by the KFP offset. Since 1992, MND has been involved in developing the KTX-2 (47:127) (108).

The South Korea seeks to obtain the maximum possible benefit in technology and manufacturing skills rather than a straight sale of off-the-shelf aircraft. ROK originally wanted to purchase only three of the 120 aircraft off the shelf, purchase an additional 20 in kit form, and produce the remaining 97 aircraft in South Korea under license from the U.S. contractor (28:13). In the summer of 1989, the final mix (12 off the shelf, 36 in kits, and 72 under licensed production) was decided on in a meeting between the U.S. Secretaries of Defense and Commerce and the Korean Minister of National Defense (28:9).

In 1986, the Korean government selected Samsung Aerospace Industries as the prime contractor for the program, before a decision had been made on the KFP aircraft, despite recommendations from the ROK Ministry of National Defense to select Daewoo Aerospace which had experience manufacturing airframe components for the General Dynamics F-16 (21:215). In addition to producing a third of the airframe, Samsung has responsible for final assembly of the aircraft. The company produced components such as main beam, tailboom, nose, roof and engine cowls under contract with Bell Helicopter Textron to produce a military version of the 412SP commercial helicopter for the Korean army aviation modernization program(21:217). Daewoo Heavy Industries produces another third of the airframe. The firm began producing F-16 fighter airframe components in 1984 and produced the center fuselage center section, side panels and ventral fins for the F-16 (22:219). Korean Air produces the final third of the airframe. Its Aerospace Division was established in 1976 to manufacture and develop aircraft and it is now a leading aircraft manufacturer in Korea (3:71). Hyundai is the other main player in the program and along with Samsung, Daewoo and KAL.

In preparation for the KFP work, Samsung has hired more than 1,400 new employees and has invested more than \$34 million in facilities and equipment. In addition, \$200 million investment is planned in connection with upcoming projects (21:217). Samsung also added 249,000 sq. ft. of manufacturing space in the Changwon industrial complex and an additional 560,000 sq. ft. is planned, with the construction of a new facility for final assembly and flight testing of FX and HX aircraft (21:217). Samsung finished to prepare for producing F-16 from 1992 to 1994 and began to produce

them from July, 1994. At last, Samsung provided the first F-16 to the Korea air force on the May 1995 (47:122).

#### F/A-18 Selection Process

In the early 1980s, when the Republic of Korea initiated the FX program, Northrop, with its F-20 aircraft, and General Dynamics (GD), with its F-16 aircraft, were the U.S. competitors for the sale of fighter aircraft. Because of Northrop's decision to halt development of the F-20, Northrop dropped out of the competition in 1986. After then, McDonnell Douglas entered the picture with its F/A-18 aircraft (28:9).

The ROK evaluated the proposals submitted by GD and McDonnell Douglas during the three years between 1986-1989 (28:1). McDonnell Douglas offered a six-point plan beyond licensed production of F/A-18s. It included a joint, long-range study to develop a strategic plan for Korean industry, the development of an F/A-18 logistics support base, advanced systems research, a share in the work on the firm's ultrahigh bypass commercial transport program and joint development of an entire advanced military trainer system. General Dynamics offered the transfer of manufacturing, management, and design and development technologies. In manufacturing, the firm offered to grant Korean industry the rights to produce and market Ag Husky and Ag Truck agricultural aircraft and to coproduce Cessna Caravan 1 utility aircraft for the Asian market. The firm also offered to provide management training for advanced CAD/CAM technology and an automated logistics management system. General Dynamics offered to provide Korean industry the design rights and a codevelopment program for an upgrade version of the Cessna T-37 trainer and so on (23:195). In their

evaluations, they considered the capabilities and costs of the aircraft as well as the perceived economic benefits of selecting each aircraft.

In February 1988, because of concerns of about the technology issues, DOD provided to the ROK a tentative list of items on both aircraft that could not be produced in Korea and must be purchased through FMS channels. This was called the FMS-Must List (28:11). The list included the "APG-65 radar, electronic warfare equipment, classified computer software and other avionics" (24:34) as well as the "inertial navigation systems, engine hot section and other sensitive technologies" (5:20). Despite these restrictions, most knowledgeable observers believed that the KFP would enable the ROK to meet their "industrial development goals to some extent" (28:12).

Korea's written policy at the time was to require 50 percent offsets of the total contract, with emphasis placed on direct offsets. Since fall in 1988, Korean and U.S. government officials had negotiated a memorandum of agreement on the sale. South Korea had argued for fewer direct purchases, but the U.S. had remained firm on the number such as 12 for FMS, 36 for kits to assemble, and 72 for licensed production (23:192). The U.S. also rejected a Korean request for a 30-35 percent direct buy-back provision. The Defense Security Assistance Agency contended that the transfer of U.S. technology in the licensed production program, in essence, an offset commitment. This was the biggest sticking point in the negotiations. Without directed offsets, the small number of aircraft involved means it will be less profitable for Korean firms to get involved in major subsystems work, such as avionics, that require substantial investments in equipment and tooling. One of U.S. industry executive said "There will not be enough components to amortize the front-end investment unless the government steps in and

picks up some of those nonrecurring costs. I am not sure the government has committed to that. They have put some money into research and development, but it is not clear that they have committed any to the production side" (23:193).

In the summer of 1989, the DOD intervened and advised the South Korean Minister of National Defense and the two U.S. prime airframe contractors that it could not support a sale involving excessive offsets (28:14). Consequently, Korean Minister of Defense Lee, Sang Hoon sent a letter to Secretary of Defense Cheney advising that ROK would "take special measures to apply the bottom line of 30% offset with a view to helping relieve US businesses of offset burden to a reasonable extent" (33:18).

Because of perceived similarities with the Japanese FSX program, there were indications that Congress would carefully scrutinize the KFP. Senators Alan Dixon, who opposed the Japanese FSX, and Heinz were Congressional opponents and introduced a resolution asking for a review of the program to include a General Accounting Office (GAO) report in July 1989 (29:11). In August 1989, the name of the program was changed from FX to the Korean Fighter Program (KFP) to distinguish it from the U.S. - Japan FSX program (28:1) which was embroiled in controversy at the time.

A McDonnell Douglas official said that there were important distinctions between the KFP and the Japanese FS-X. First, the KFP did not include any development work in Korea. Second, the economic returns to the U.S. were expected to be higher. Third, there was a more fully integrated (DOD and Commerce) U.S. negotiating position on the KFP than on the FS-X (24:35).

In the summer of 1989, the final mix (12 off the shelf, 36 in kits, and 72 under licensed production) was decided on in a meeting between the U.S. Secretaries of Defense and Commerce and the Korean Minister of National Defense (28:9).

South Korea selected the F/A-18 on December 20 1989, despite a General Dynamics proposal to upgrade existing Korean Air Force F-16s (23:196). South Korea announced that the F/A-18's capabilities and McDonnell Douglas' economic package outweighed the F-16's lower costs (24:34) (32:1)

In addition to the involvement in the KFP by Congress and the DOD, there was also involvement by the U.S. Department of Commerce. Since May 1989, Commerce has been involved in program discussions, coordinated on the draft Memorandum of Understanding between the U.S. and ROK governments, and been involved in setting the U.S. negotiating position. The participation of Commerce is partly due to legislation enacted in September 1988 which requires DOD to "consult with the Secretary of Commerce on MOU with potential impact on the U.S. defense industrial base" (28:10).

On 4 April 1990, in testimony before the Subcommittee on Investigations of the House Armed Services Committee, Joseph E. Kelley from GAO's National Security and International Affairs Division, concluded that at that point the ultimate effects of the technology transfer and economic effects of the offsets could not be determined (28:16).

Following that testimony the GAO issued a classified report which raised "serious concerns" about the technology transfer issues and U.S. estimates of industrial base effects associated with the F/A-18 program (30:30). The debate about similarities to the FS-X continued after the ROK switched from the F-18 to the F-16. In October 1990, the

U.S. and Korean governments initialed a Memorandum of Understanding (MOU) on the program (32:1).

#### The F-16 Selection Process

In October 1990, South Korean Defense Minister Lee, Jong-Koo ordered "a complete reassessment" of the F-18 deal which was to include "the acquisition method, the number of planes to be purchased, the extent of the technology transfer, and even the model" (25:14).

In a November 1990 article in Flight International, a McDonnell Douglas representative confirmed that there had been a price increase but dismissed reports that it was as high as 30% (26:4). However, Korea announced it was reevaluating its decision to select the F/A-18.

During the recompetition in January and March 1991, both the U.S. Navy and Air Force made price presentations to the Korea. It is generally acknowledged that the F-16 was always the less expensive alternative for the Korean Fighter Program (32:4).

At the time, General Dynamics proposed several offset projects to the South Korea. The U.S. F-16 engine contractors- - Pratt and Whitney and General Electric - - also submitted offset proposals to the Koreans and continued to compete for the sale (32:11).

The Defense and Commerce Departments examined the offset projects proposed by General Dynamics and the engine contractors. Several of the projects that General Dynamics told GAO researchers the Koreans were most interested in have been flagged by the Defense Technology Security Administration as being of technology transfer

concern. In fact, in May 1991, the Defense Technology Security Administration recommended deletion of and /or restrictions on some of the projects.

In March 1991, the ROK announced that it was reversing its earlier decision to buy F/A- 18 aircraft in favor of GD's F-16 aircraft(32:1). The reasons given for the change are varied. The higher unit cost of the F/A-18 probably was at least partially responsible for the decision. Several publications cite a difference of \$1 billion between the two bids (16:14). According to William B. Scott, who is author of article, the decision was also influenced by the "increased maturity of the F-16's Block 50 version, particularly its capability to engage beyond visual range targets" (22:53). An article in the October 28, 1991 Countertrade Outlook, says that the "real" reason for the switch was "the discontent among 14 ROK contractors....(who) failed to obtain the level of technology transfers from MDC that they believed to be indispensable for developing their own aerospace manufacturing capabilities" (27:4).

Between the Korean announcement of the F-16 selection in March 1991 and the MOU negotiations in May 1991, interagency meetings occurred at the action officer level to coordinate various positions on the MOU and the annex and to exchange information. Representatives from the Departments of State and Commerce, the Defense Technology Security Administration, and DSAA met weekly. In addition, a Commerce Department representative was present during the MOU negotiations (32:7).

The U.S. Air Force Korean Fighter Program manager at Wright-Patterson Air Force Base prepared an industrial base factors analysis of the program as required by the Fiscal Year 1989 Defense Authorization Act (10 U.S.C. 2504) and the Defense

Department's implementing guidance. The four versions were done in May 1989, December 1989, April 1991, and May 1991(32:7).

An October 1989 Defense Department memorandum on an earlier version of the Air Force analysis indicated the analysis did not identify or address potential negative impacts on the U.S. industrial base or the extent to which the program might create a future competitor at the prime or sub-tier levels (32:7). In the May 1991 version did not include some significant items known to be candidates for Korean licensed production, such as the engine, the general avionics computer, and the inertial navigation system (32:7).

The Defense Department solicited and considered information and recommendations from the Commerce Department regarding the effects this and similar programs will have on the industrial base because of 1989 authorization. The Commerce Department conducted a limited, six-question survey of U.S. suppliers for the 55 items listed in the annex to the MOU and received 23 responses indicating satisfaction with the program (32:9).

In April 1991, in response to a request from the Defense Technology Security Agency (DTSA), the F-16 System Program Office issued a report comparing the level of technology transfer for two programs which are KFP and FSX. The report concluded that the programs differ in four essential ways. First, the FSX includes Japanese developed avionics system while there will be no development of components or subsystems in the KFP. Second, the Japanese will develop a new airframe, while the Koreans will simply be using existing manufacturing technology and processes to build an established air

frame. Third, the Japanese were provided software development tools which the Koreans will probably not receive. Finally, the Japanese were provided with engine/aircraft integration data which the Koreans will not receive(3:76).

In classified report on the F/A-18 program, GAO suggested that DSAA strengthen MOU provisions regarding third-party transfers and verification of quantities of Korean Fighter Program items produced in Korea and their disposition. DSAA did improve the provision on verifying production quantities and made a change to strengthen the third-party transfer provision. However, GAO evaluated an additional change made to the third-party transfer provision during the May 1991 negotiations to determine the extent to which the restrictions may have been technically weakened. DSAA believes that the change does not weaken the restrictions on third party transfer (32:5).

The MOU for the F-16 program was sent to Congress for their review in July 1991(31:31). The House Foreign Affairs subcommittees on Arms Control and on Asian and Pacific Affairs met in a joint session to discuss the program on August 1. Richard A. Gephardt, who was House Majority leader, expressed concern about the level of technology transfer during the hearings. Several months earlier, he had requested that the GAO investigate the program (33:23).

In October 1991, the Air Force drafted specific positions on technology transfers for the Delegation of Disclosure Authority Letter, which is the Defense Department guidance on reliability (32:6).

The KFP was officially launched with the Letter of Offer and Acceptance (LOA) signing, satisfying the South Korean government's requirements. A LOA signed by U.S. and South Korean government officials on Oct. 24, 1991 set the program's cost at about \$5 billion. General Dynamics and Samsung Aerospace Industries concluded a commercial agreement on October. 25, 1991. Samsung officials signed a KFP contract with the government in December 1991, completing the program's contractual details. Samsung also defined work shares with its principal airframe subcontractors-Daewoo, Korean Aerospace and Hyundai-which have key roles in component and subassembly production(22:53).

#### IV. Case Analysis of the Republic of China (Taiwan) Offset Program

##### Chapter Overview

This chapter discusses the historical background of the Republic of China's (ROC) offset program, aerospace industrial development, policy, organization, and process. It begins with background information on the ROC, the history of the country, the relation with Mainland China, and U.S., and its current political, social, and economical environment. Next, we will discuss how the ROC will develop her aerospace industrial policy, procedures, and the future direction of aerospace industries. Third, how the offset policies can effectively fit in the national goals for the developing aerospace industry. Fourth, the ROC offsets organization will be discussed, including government, Ministry of National Defense (MND), and civilian organizations. Finally, the processes of executing the offsets need to be discussed. However, this chapter will focus on how to use the effective organization to improve the offset process.

##### Historical background

##### Location and Topography

Taiwan is situated in Pacific Ocean about 160 kilometers (100 miles) from the southeastern coast of the Chinese mainland. Located about midway between Korea and Japan to the North and Hong Kong and the Philippines to the South, Taiwan is a natural gateway for travelers to and within Asia. Shaped roughly like a tobacco leaf, Taiwan is 394 kilometers (245 miles) long and 144 kilometers (89.5 miles) wide at its broadest

point (78:3). The area of Taiwan ( including around 77 small islands) is 35,981 square kilometers ( 13,850 square miles), about the same as Holland (79:100).

### Population

At the end of 1995, Taiwan's population exceeded 20 million, which makes the island one of the world's most densely populated places. Except for the approximately 325,000 aborigines, the people of Taiwan originate from the Chinese mainland (78:6).

### Relation with Mainland China

After World War II, Chinese engaged in a civil war between the Koumintang (KMT) Government and the Communist Party. Finally, the KMT Government withdrew from the mainland to Taiwan in 1949. From that time both Taiwan (ROC) and Mainland China announced to the world that each is the only formal government of the Chinese. Taiwan and Mainland treat each other as potential threats, so both sides need to purchase or develop new weapon systems to defend themselves. In general, Taiwan got arms from the U.S. and Mainland China acquired weapons from the former Soviet Union.

### Economic Conditions

Since the appreciation of the New Taiwan Dollars in great extent in 1986, the structural changes of overall economical and social environments which resulted have raised production costs sharply and driven export oriented enterprises out of the country (80: 23). In recent years, the ROC wants to maintain proper growth of the economy, so it focuses on industrial development and has directed the establishment of high-tech industries in addition to the enhancement and upgrading of traditional industries (81:2).

## Aerospace Industrial Development

### Background

For speeding industrial improvement, the ROC selected 10 potential industries (Fig.1) to develop that can fit in Taiwan's total industrial environment (83:4). The aerospace industry is one of them, and the ROC wants to develop it and combine defense industries with the correlated industries and upgrade the nation's industrial and technical skills (82:1).

Table 7: ROC Top 10 Newly Developing Industries

1	Communications	6	Aerospace
2	Computers	7	Materials
3	Consumer Electronics	8	Chemicals
4	Semiconductors	9	Medical Care
5	Automatic Production	10	Pollution Protection

### Policy and Strategy

In 1990, the Executive Yuan of the ROC enacted "The Aerospace Industry Development Plan" and set up a committee for aviation and space industry development ROC for 1. Help the government to develop the aerospace industry's future directions, strategies, and plans.

2. Effectively integrate and use of resources to help civilian industries improve the quality and productivity of their products.

3. Enhance international cooperation, learn key technologies, and

expand international markets (83: 21).

According to the estimate designated for the National Development Programs in this country, the government of the ROC is poised to spend huge amounts of money on projects in the fields of transportation, energy, environmental control, and national defense in the coming several years (81:1). The ROC wants to match the huge amount of procurement with the chance of industrial cooperation (offset) to break through the bottleneck of enhancement and upgrading of the traditional industrial capabilities of Taiwan.

#### Practice of Main Points

The Ministry of Economic Affairs (MOEA) follows the aerospace industry development policy and strategy to enact the following main points (82:1-5).

1. Set up Aerospace Industrial Cooperation Program Executive Committee.
2. Develop Industrial Cooperation Plan (Offset).
3. Encourage research and development.
4. Use defense technology to support aerospace industrial development.
5. Focus on raising the related technology expert.
6. Set up special area for aerospace industry to easily integrate the resources.
7. Improve the quality of aerospace industrial products.

## Offset in ROC

### Definition

The term “industrial cooperation plan” in ROC has the same meaning as offset agreement. Different countries have different definitions of offset. For example (76:9): in Canada, a foreign firm participating in an important federal procurement project must submit an “Industrial and Regional Benefit Program (IRB),” which serves as one of the important factors of consideration in evaluating a firm. In Switzerland, a supplier of civil and military aircraft must procure from inside the country machinery, equipment, or components or parts of same value. In Australia, their Civil Offset Program also demands that for federal government procurement above a certain amount, there must be a commitment amount equivalent to thirty percent of the procurement price for promotion of industrial and technological development in Australia. Offset means the contractors of some important government procurement projects are required to commit an effort equivalent to the value of a certain percentage of the contract price of related projects.

For a government procurement project in the ROC, the Industrial Cooperation Steering Committee (ICSC) will decide what offset should be implemented, and if it will be put into the offset agreement. The committee will focus on certain important procurement programs as decided by ICSC for promoting industrial cooperation programs. The ratio between the industrial cooperation amount and the procurement amount in a procurement project is not mandatory but is decided on a case by case basis depending on local industrial capability, substantial requirements and actual situations.

### Scope of Industrial Cooperation (offset)

According to industrial cooperation items, procurement projects, and industrial policies, industrial cooperation can be generally classified into five categories:

1. Essential cooperation and services are provided by contractors as requested by the procuring agency based on operational requirements in a procurement project. Offset includes training related to operation, maintenance and entire plant operation and management.
2. Relevant cooperation or services are provided by contractors as requested by the procuring agency for requirements expanded into a procurement project. For example, the Nuclear Island Project of the fourth nuclear power plant asked the contractor to transfer nuclear waste processing techniques to Taiwan.
3. Purchasing agencies consider commercial factors such as procurement and maintenance costs, and convenience and proper timing of maintenance. They request contractors to have a portion of the equipment, products, components or parts of the procurement project manufactured locally. In the past, there were a number of examples of this kind of industrial cooperation such as the procurement of multiple electrical train units in the Department of Rapid Transit Systems. ROC requested the contractor to have some of the units assembled in Taiwan. Another example, in the incinerator construction project, the Environmental Protection Administration of the Executive Yuan

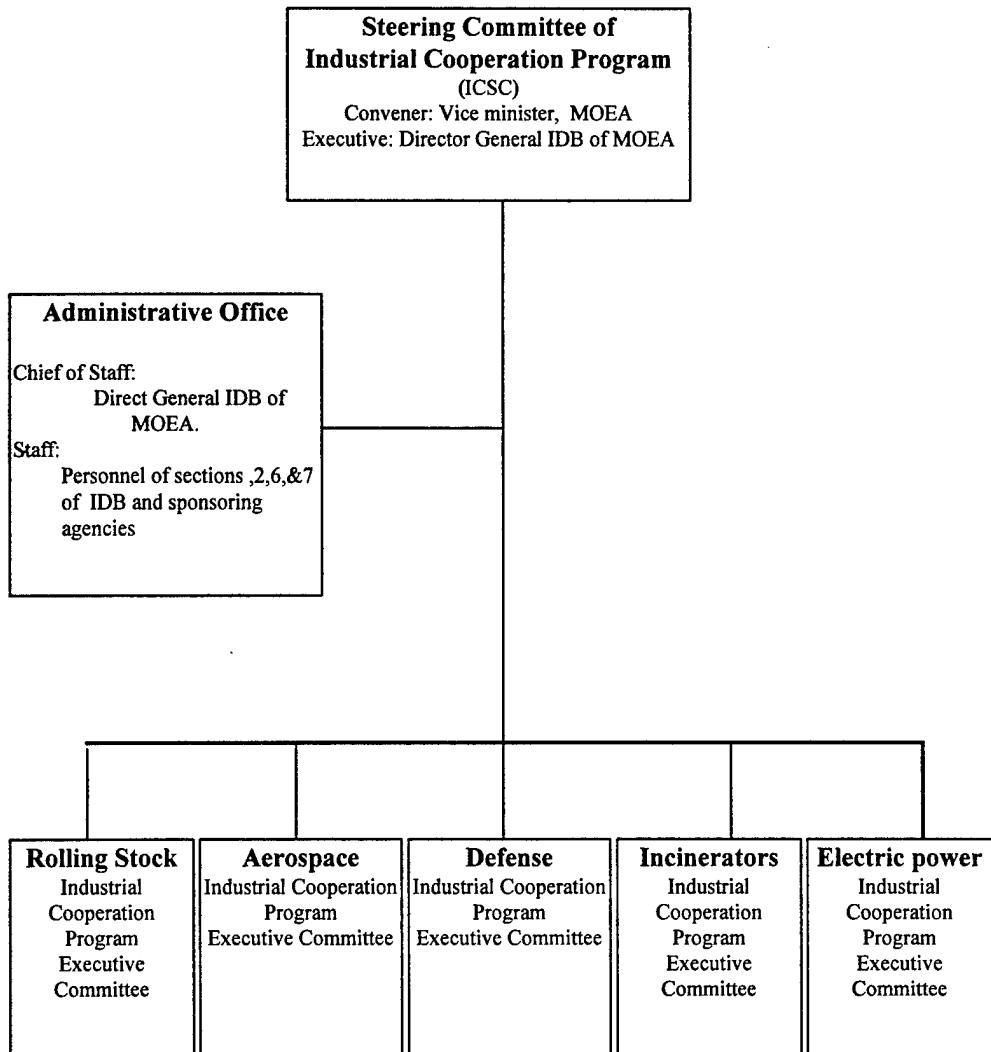
asked the contractors to have a certain percentage of local contracts reached at certain milestones of the construction.

4. According to the government industrial cooperation policy, the ROC requests the contractor to provide the offset agreement for the related procurement items. Examples of this category include the industrial program in the F-16 fighter procured by China Air Force (CAF). Lockheed was requested to assist local firms to produce some of the F-16 components or parts. Also, the Nuclear Island Project of the fourth nuclear power plant and nuclear energy industry related technologies were requested to be introduced to this country.
5. Industrial cooperation for strategically promoted items, though irrelevant to the procurement project, as requested by the government authority in charge of industries in consideration of industrial policies. For example, the contractor was requested to introduce to this country relevant technologies required by general industries such as opto-electronics, electrical engineering, mechanical engineering in the Nuclear Island Project of the fourth nuclear power plant (81:12).

#### Organizations of Offset

Based on the “Economical Revitalization Program- An Action Plan for the Promotion of Private Investment” a plan was approved at the 2338th meeting of the Executive Yuan of ROC. For effective promotion of offset agreements, the Ministry of Economic Affairs (MOEA) organized an “Industrial Cooperation Steering Committee” (ICSC) on August 12, 1993 (81:39). The vice minister of MOEA is the convener of the

ICSC, and the director general of Industrial Development Bureau (IBD) is the executive secretary of the committee. According to the scope and items being procured programs, ICSC selects the sequence of priority for the promotion of industrial cooperation. Under the ICSC are five ad hoc executive committees, namely Rolling Stock Industrial Cooperation program executive committee, Defense Industrial Cooperation program executive committee, Electric Power Industrial Cooperation program executive committee, Incinerator Industrial Cooperation program executive committee, and Aerospace Industrial Cooperation program executive committee, plus one Administrative office. The organizational structure of ICSC are shown in Figure 5.



**Convening Agencies:**

-Industrial Development Bureau.	-Industrial Development Bureau.	-Industrial Development Bureau.	-Construction Engineering Office of Wastes Resources Recovery, Environmental Protection Administration, Executive Yuan.	-Industrial Development Bureau.
-Department of Rapid Transit System, Taipei	-Committee for Aviation and Space Industry Department	-Material Department, Ministry of National Defense	- Taiwan Power Company	-Institute of Nuclear Energy Research, Atomic Energy Council
-Department of Kaohsiung Mass Rapid Transit (MRT)			- Industrial Development Bureau	Executive Yuan
- Provisional Engineering Office of High Speed Rail				
- Taiwan Railway Administration				

Figure 5: Industrial Cooperation Organization

## Function of Offset Organization

### Government

The organization which administers offset can be divided into three categories such as steering committee, administrative office, and executive committees (81:3).

- The Steering Committee has three main functions to deal with. First, the steering committee examines the “Industrial Cooperation Specifications” and approves/records the industrial cooperation program papers. Second, it supervises the implementation of industrial cooperation. Finally, it examines the closure of industrial cooperation program. The Steering Committee more often focuses on the control of industrial cooperation and making policy for industrial cooperation.
- The Administrative Office is a staff organization of Steering Committee to be responsible for administrative operation, coordination, tracking, and performance evaluation during implementation of various industrial cooperation programs. The six main functions of the Administrative Office include:
  1. Coordinating relevant ministries and commissions for implementation of industrial cooperation agreements.
  2. Progress tracking, efficiency rating and results consolidating of industrial cooperation agreements.
  3. Coordinating various ad hoc executive committees in industrial cooperation progress.
  4. Establishing background data bank of bidding companies for reference in

signing agreements.

5. Establishing domestic industrial cooperation requirements data bank.
6. Studying changes of industrial cooperation agreements under GATT relevant regulations and European and U.S. domestic laws.

- Each Executive Committee will operate differently to promote industrial cooperation for various procurement projects. The members of the committees include representatives of relevant government authorities, purchasing agencies, research development organizations, scholars, and specialists. The five major functions of the Executive Committees include:
  1. Deciding “Industrial Cooperation” directions or contents for reference by procurement agencies.
  2. Assisting procurement agencies in formulation of “Industrial Cooperation Specifications” or examination of the “Industrial Cooperation Specifications” covered in bid invitation documentation.
  3. Working with procurement agencies and the Administration Office to examine industrial cooperation proposals submitted by bidders.
  4. Controlling of industrial cooperation implementation schedules.
  5. Preliminary examining closure of the industrial cooperation program.

## Military

In the next ten years, the ROC will upgrade her overall aging military equipment for second generation weapon systems. This will cost \$12 billion for purchasing new equipment for the Army such as M60A3 tank, air defense missiles, Patriot missiles, AH-1W armed helicopters (102). For the Navy, the ROC has already purchased 6 Lafayette cruisers from France costing around \$2.8 billion, and the Navy leased missile-cruisers from America. The ROC Air Force (ROCAF) purchased 150 F-16s and 4 E-2C (Hawk-eye) pre-alarm aircraft and leased T-38 training planes from U.S., and is purchasing 60 Mirage 2000-5 from France (103). According to the above information, we can easily understand that the ROC will spend a lot of money for upgrading her aging military equipment for her national defense requirement. This is a good chance for ROC to negotiate with arms exporters to provide high technology for supporting domestic aerospace industrial capability.

## Military Organization and Procedure

Now we will discuss the ROC military organization to perform the offset agreements. In general, MND has no special organization to take charge of the offset agreements, but the Defense Industrial Cooperation Program Executive Committee is convened by the director general Industrial Development Bureau (IDB) and chief of Materiel Department MND. The offset organization in MND includes logistics, planning, budget, procurement people, and related staffs in each service.

The procedures of offset in MND will be discussed in the following steps. First, MND will make the offset policy according to long range military requirements and

government industrial development policies. Second, each related service will follow the MND policy to ask foreign contractors to provide an offset proposal. Third, the initial contractors' proposals will be sent back to the service. Fourth, MND chooses the qualified domestic contractors to execute the offset agreement. Fifth, the service notifies both the domestic and foreign contractors to prepare relevant affairs. Sixth, both domestic and foreign contractors discuss with each other and make the detailed offset plans. Seventh, foreign contractors provide the offset proposal to the service. Eighth, the service reviews the offset proposal to determine whether or not it matches the MND policy. Finally, the service will report the final offset proposal to MND. In addition, the Industrial Development Bureau will cooperate with MND and military R&D units to provide technical support to purchasing services (Figure 6).

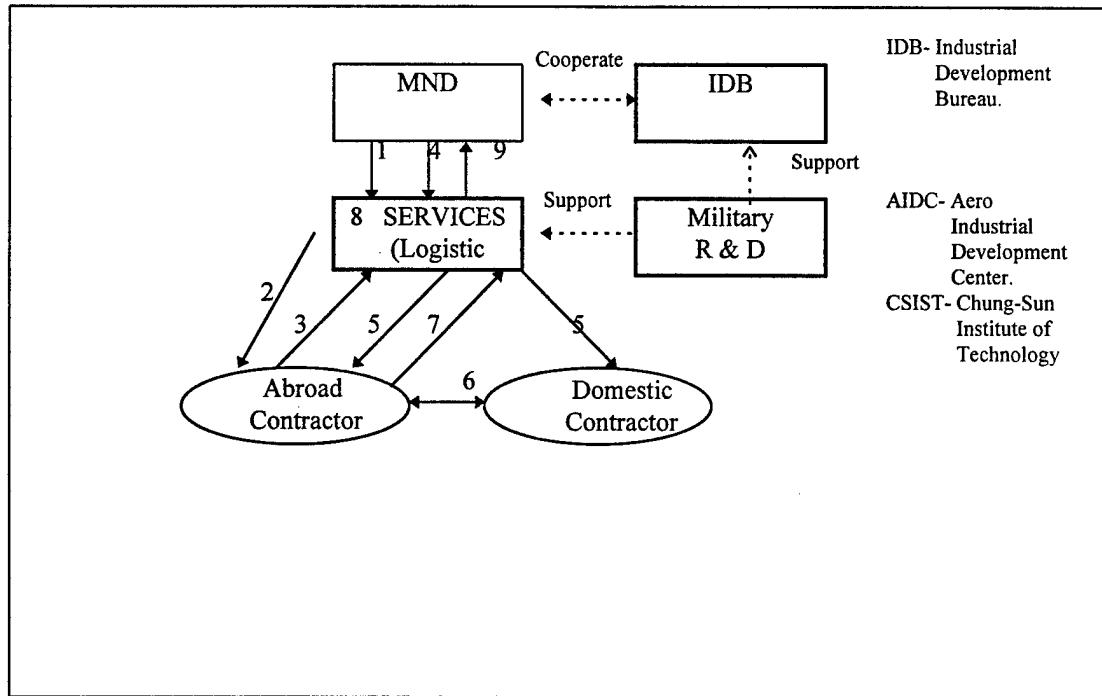


Figure 6: Military Offset Organization

### Civilian

Because three-fourths of ROC businesses are small or middle-sized enterprises, most of them cannot deal with offset agreements by themselves, and they need the government to help and direct the execution of offset agreements. Now, the ROC does not have any civilian organization to match and execute offset agreements, whereas they only have industrial associations to join the executive committees to provide suggestions or pass the offset information to the businesses (104).

### Principle of Implementation:

In preparation for industrial cooperation (offset) program, if the required items are brought up by a purchasing agency and are based on its own needs, these items must be put into the master offset agreement for compulsory enforcement. The ICSC will contact related units (IDB, R&D units) to help the purchasing agencies in developing a feasible plan. At the same time, ICSC will provide services to improve the environments of local industries.

When the industrial cooperation items are not directly related to the mission requirements of purchasing agency, we cannot force contractors to put such items in the master agreement. For these items, ICSC will take the lead and actively help industries to promote industrial cooperation agreement basing on the spirit of mutual benefits and good faith. For any important development or procurement projects, the ratio between the obligation amount for industrial cooperation and procurement funds will not be ruled upon and will be directed by the relevant executive committee on a case-by-case basis (81:8).

### General Promotion Procedure

Promotion of industrial cooperation has its own procedures, and we can simply describe the general process as following steps (86:110).

- Step 1- Selection of a suitable procurement program for industrial cooperation. Responsible agencies are the various ministries/commissions and executive committees.
- Step 2- Draft of the industrial cooperation specification. Various executive committees are responsible for doing this job.
- Step 3- Execution of a letter of commitment for industrial cooperation. Industrial Development Bureau (IDB) is responsible for that.
- Step 4- Negotiation of an industrial cooperation program. The units of the Industrial Development Bureau and various executive committees are responsible for it.
- Step 5- Execution of the industrial cooperation program. Industrial Development Bureau executes this function.
- Step 6- Supervision over implementation of the Industrial Cooperation program. ICSC takes charge of this function.
- Step 7- Examination of closure of the industrial cooperation program. Industrial Cooperation Steering Committee is the responsible agency.

However, industrial cooperation is actually implemented in the procurement program. Every detail in the promotion procedure must closely match the procurement flow to gain time to work out concrete and feasible industrial cooperation plans. Both buyer and seller can get maximum benefits from this industrial cooperation. Figure 3

shows the promotion flow of industrial cooperation, in general, which includes its relationship to the procurement flow and work distribution of promotion organizations of the industrial cooperation program at various levels. Different cases may need slight amendments based on the nature of procurement such as open tender, restricted tender, or on the confidentiality of the procurement as in national defense materiel. However, the main principle and spirit will remain unchanged. Therefore, each procurement project obligated to implement industrial cooperation will have its own flow charts (81:6).

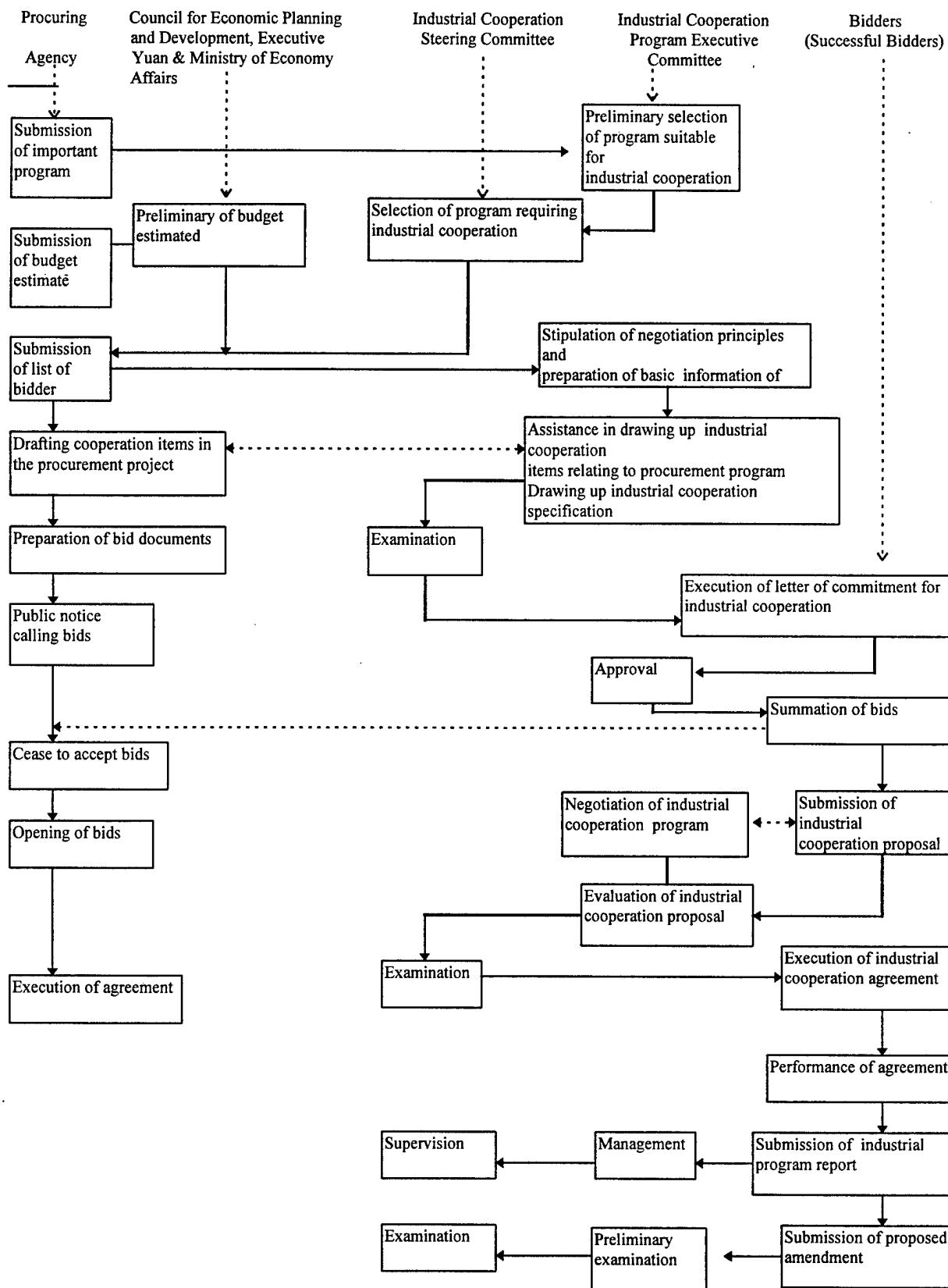


Figure 7: General Offset Procedure

## The Goals of Offset

When the Industrial Cooperation Steering Committee (ICSC) organized on August 12, 1993, the Committee for Aviation and Space Industry Development began to develop an industrial cooperation plan for five years from 1993 to 1998 (82:15). This plan has four goals, and each goal is separated in three stages to execute. Table 2 shows us the goals, the strategies and execution organizations.

Table 8: The Execution Offset Plan for Five Years

Strategy Goal	Stage I 1993/7-1994/12	Stage II 1995/1-1996/6	Stage III 1996/7-1998/6	Execution Units
1. Establish the management and control of offset credits.	<ul style="list-style-type: none"> <li>1. To learn the offset process and establish the fix communication pattern</li> <li>2. Establish standard operational procedure.</li> <li>3. Establish review of offset credit process.</li> </ul>	<ul style="list-style-type: none"> <li>1. Integrate and coordinate the related aerospace industry units.</li> <li>2. Review and track the processing offset agreement</li> <li>3. Modify the offset process.</li> </ul>	<ul style="list-style-type: none"> <li>1. Establish completely offset system for future offset negotiations.</li> <li>2. Enact the next stage of offset policy.</li> </ul>	<ul style="list-style-type: none"> <li>1. CASID.</li> <li>2. IDB.</li> <li>3. MOEA.</li> </ul>
2. Help local firms to use offset credit, and establish standard process.	<ul style="list-style-type: none"> <li>1. Teach firms to use offset credit to learn high technology.</li> <li>2. Provide aerospace offset model to other Executive Committees.</li> <li>3. Help firms to solve the international law problems.</li> </ul>	<ul style="list-style-type: none"> <li>1. Help firms to cooperate with foreign aerospace firms.</li> <li>2. Couch the offset agreement.</li> </ul>	<ul style="list-style-type: none"> <li>1. Attract the local firms to join the offset agreement.</li> <li>2. Enlarge the offset items and field.</li> <li>3. Plan the future offset directions.</li> </ul>	<ul style="list-style-type: none"> <li>1. CASID.</li> <li>2. MOEA.</li> <li>3. IDB.</li> <li>4. IRY Industry Research Yuan</li> </ul>
3. Strive new offset agreements.	<ul style="list-style-type: none"> <li>1. Refer the present offset agreement pushing about the new one.</li> <li>2. Raise the negotiation experts for offset agreements.</li> </ul>	<ul style="list-style-type: none"> <li>1. Improve local firms capacity to compete the foreign companies.</li> <li>2. Match the top 10 new developing industries requirements to strive the new offset agreements.</li> </ul>	<ul style="list-style-type: none"> <li>1. Get the assurance to buyback or coproduce from foreign contractors.</li> <li>2. Establish the permanent offset negotiation model.</li> </ul>	<ul style="list-style-type: none"> <li>1. CASID.</li> </ul>
4. Establish the mutually beneficial pattern of national procurement.	<ul style="list-style-type: none"> <li>1. Evaluate the chance of the mutually beneficial defense equipment procurement.</li> <li>2. Invite MND to join the discussion for making offset requirement plan.</li> </ul>	<ul style="list-style-type: none"> <li>1. Make sure the mutually beneficial agreement can fit in the local firms.</li> <li>2. Set up a negotiation team.</li> </ul>	<ul style="list-style-type: none"> <li>1. Enact the mutually beneficial rules for national procurement.</li> </ul>	<ul style="list-style-type: none"> <li>1. CASID.</li> <li>2. MND.</li> <li>3. MOEA.</li> <li>4. MOTI. Ministry Of The Interior.</li> </ul>

## The weakness of executing offsets in ROC

In general, the factors of successful offset agreement need precise goals and policies, feasible agreements, a unified organization to coordinate the related government and civilian units, and the integrated power of the nation's technical and economic capabilities. From the offset organization and procedure, we can find some weaknesses of offset agreements in the ROC.

### 1. Lack of incentive for civilian firms to execute offset:

Although the five-year offset plan described how to help the civilian firms support into the offset plan, small companies cannot afford the cost, and the big companies do not want to get into this field owing to the uncertainty of the future markets. In Taiwan, only a few companies have the capabilities to produce the components of high-tech aerospace products, so it is not easy to combine the local firms focusing on a specific production line from the top to the bottom. Furthermore, local firms are only concerned with how to use offsets to increase the profits but pay less attention to matching the nation's industrial development policy (106:97).

### 2. Lack of authority for the coordination and integration function for the Committee for Aviation and Space Industry Development (CASID):

The CASID only belongs to a sub-organization of MOEA and it needs to integrate the whole nation's offset affairs. Sometimes, different organizations have different missions to execute. For example, MND focuses on gaining the weapon system for national security reasons, but the Ministry of Economic Affairs aims at reducing foreign pressure for getting into international organizations such as GATT. Also, the Ministry of

Foreign Affairs emphasizes using the procurement to conquer the diplomatic barrier from Mainland China. Different departments have different purposes for important procurement projects, so it is not easy to integrate them into one offset policy.

3. Lack of the capability of integrated civilian and government industries to execute offset:

Generally, most of the business in Taiwan are small or middle scale. They focus on specific areas such as petrochemistry, computers, textiles, communications, and basic electronics, so there are few firms that can design or produce an integrated high-tech aerospace product. In Taiwan, only the governmental aeronautic and scientific research-and-development organizations have the experience to produce the integrated weapon system or aerospace products. For example, Chung-Sun Institute of Science and Technology (CSIST) and Aero Industrial Development Center (AIDC) have the experience to produce the Chingkuo Indigenous Defense Fighter (IDF), Air Arrow I short range air-to-air missiles, Air Arrow II intermediate range air-to-air missiles, and Hsieng-Feng anti-ship missile.

In 1995, the ROC government approved a proposal that was the first of many steps in the process to turn the state enterprise into a private commercial operation. The legislators of ROC have allowed the AIDC a period of three and a half year to phase in full privatization (85:6). This change from military to private status will enable the AIDC to form joint ventures with high-tech foreign manufacturers. This, in turn, will bring advanced aviation technology into Taiwan to accelerate the growth of the island's aerospace industries. How to join the technology of civilian firms and government organizations to effectively execute the offset agreement is another important issue.

According to the above issues, we will make some suggestions for solving the problems in next chapter.

### Case Study of F-16 program

#### Background

Offset agreements started very late in the ROC. Since 1988, the China Air Line (CAL) signed the first offset agreements with Boeing, McDonnell Douglas, and Pratt & Whitney (P& W) for purchasing 10 commercial aircraft and engines, and the Pratt and Whitney Company helped CAL build an engine maintenance shop(90:35). The Executive Yuan recognized the importance of aerospace industries for the future economic development, and the offset agreements are the best chance for the aerospace industries. For this reason, the Executive Yuan enacted the plan of Aerospace Industrial Development in 1990, and enacted a law for the civilian and public enterprises. When they purchase aerospace-related products, they need to strive for the offset agreements to accelerate the aerospace industrial development (91).

The ROC wanted to purchase the F-16 fighter to retire their aging fighters since 1980, but the U.S. government did not approve this FMS for political reasons. On September 2, 1992, the Bush government agreed to sell 150 F-16s to the ROC after the U.S. government had stopped the major weapon systems FMS sale 12 years previously, owing to the pressures of presidential election and trade deficit (89:1556). Finally, the ROC decided to buy 150 F-16A/B MLU from the U.S. for about \$6 billion over the next 10 years (92:2).

## F-16 Offset Agreement in ROC

### Original

On September 5, 1992, Gordon R. Englund, president of General Dynamics (GD), made a public speech in Taiwan about not providing the offset agreement in this F-16 FMS case to Taiwan (87:25). The MOEA of the ROC told GD that the F-16 offset agreement is one of our government's important policy (93). At that time, the ROC only desired to purchase the advanced fighter before the presidential election and for reasons of national security, the ROC signed the purchasing contract with GD without offset agreements. The ROC plans to totally renew her Army, Navy, and Air Force equipment over the next 10 years. In addition, the ROC has "a national build plan" for the next six years which will cost around \$300 billion (94). Every industrial country is interested in these two cases and wants to share some business, so this is a good opportunity for the ROC to require offset agreements. The offset agreements can help improve the maintenance capability of Taiwan's aerospace industry and stimulate the island's potential for aviation technology development.

Materiel Department, MND joined the Aerospace Industrial Cooperation Program Executive Committee to set up the Defense Industrial Cooperation Program Executive Committee to deal with Defense Industrial offset agreement. The China Air Force (CAF) followed the MND policy and continued to negotiate with GD about the F-16 offset agreement. CAF wanted GD to help ROC establish the maintenance capability for the F-

16. In October 1992, GD agreed to consider the F-16 offset agreement of ROC's request, and GD sent a group of experts to execute the preliminary site-survey in February 1993 (92:4). However, in late 1992, the General Dynamics Corporation's tactical military aircraft business was sold to Lockheed Corp. (88:60). From that time, the ROC began to negotiate with Lockheed Corp. for the F-16 sale.

In February 1993, the Legislative Yuan made a decision asking the MND and government agencies to claim the offset agreements in major weapon-system procurements and major public constructions (95:6). At the same time, the Legislature (Congress) announced that the legislators will not pass a budget to buy the F-16s if aerospace authorities do not get an offset agreement from Lockheed to have Taiwan firms produce parts worth at least 10 percent of the deal (92:7).

### Dilemma

The F-16 major contract had been signed in 1992, but the Legislature asked the MND to add the offset agreement in 1993. It is difficult to negotiate with GD/Lockheed after the contract had already been signed by both sides. The pressure came from the Legislature's demands that if there is no offset agreement, no budget will be approved approval, so the MND and CAF negotiated with GD/Lockheed and Pratt & Whitney (P&W), the engine manufacturer, about this legislative policy and discussed the details of the F-16 offset agreement (96:12).

### Achievement

The Lockheed and ROC (Industrial Development Bureau Ministry of Economic Affairs) finally signed an F-16 offset agreement on July 1, 1993. Lockheed would cooperate with Taiwan for an offset credit, which would include technology transfer, personnel training, components production and marketing assistance (92:7). Under this offset agreement worth \$600 million over 10 years, Lockheed agreed to transfer technology to Taiwan and to help Taiwan establish a maintenance factory to repair F-16 warplanes (97:5). Lockheed will transfer the technology to Taiwan to produce seven different parts of the F-16, and the maintenance center also will involve joint production of such high-tech products as missiles, advanced electronics and aerospace items (97:5). This center will generate a maintenance value of more than \$1 billion and a product value of \$600 million annually by 2000 (92:2). The technology transfer of the F-16 will be passed to Taiwan's Aero Industry Development Center (AIDC). AIDC decided to release the orders and technology to civilian companies for establishing the capability of aerospace industry in civilian firms (105).

The Executive Yuan wanted to effectively promote the offset agreement, so it let Ministry of Economic Affairs (MOEA) organize on August 12, 1993, an Industrial Cooperation Steering Committee (ICSC) for promoting the offset agreement. At the same time, MND discussed with MOEA, Ministry of Finance (MOF), and Industrial Development Bureau (IDB) to develop the defense industry offset policy (98:18). The defense industry offset, a specific, detailed, and completed plan included (98:22)

- Goal - Established an independent defense system.

- Policy - Developed the way to execute offset.
- Strategy - Established the domestic maintenance capability.
- Organization - Led by MND and supported by each service.
- Management - Controlled by MND, matched MOEA, MOF, IDB policy.

### Discussion

For trade balance reasons, ROC had the first commercial aircraft and engine offset agreements with Boeing, McDonnell Douglas, and Pratt & Whitney (P& W) in 1988. At that time, ROC was not familiar with offset affairs and did not have any organization to take charge of the offset agreement. The F-16 case is the first defense industry offset agreement in ROC. In general, the offset of the F-16 case is not a successful offset case, but ROC learned a lot from this case. Why the F-16 case is not a successful offset case? First, the procedure is reversed. ROC should sign the offset agreement before the major contract, otherwise, they will lose their priority. Second, the percentage of offset is too low. ROC only got 10% offset credit compared with the other countries in Table 1, maybe this is the lowest offset percentage in the world.

What ROC learned from this case? First, ROC set up the Industrial Cooperation Steering Committee (ICSC) as in Figure-1 to take charge of offset affairs. ROC has this specific organization so ROC can easily combine the whole resources to match the national industry-development policy. Second, ROC can use this case experience to effectively negotiate with other offset contractors. For example, Industrial Development Bureau (IDB) of ROC signed with Dassault Aviation (French) 30% offset agreement for

M2000-5 case on July 10, 1996 (99). In other cases of RF-5E reconnaissance planes with Singapore and F-5E performance upgrade cases with Northrop, ROC can use F-16 and M2000-5 experiences to get a higher offset percentage (100).

In general, ROC produces the seven components that the ROC's F-16s will use in the F-16 offset agreement. The total amount of F-16 offset is not too much, but the MOEA wants to use this case to gradually develop and build the local companies' aerospace industry capability step by step. In addition, ROC can use the offset agreement to develop the opportunities to cooperate with famous aviation firms in the world and finally become one of them.

## V. Findings and Recommendations

### Chapter Overview

This chapter summarizes the results of the research effort described herein and offers conclusions and suggestions based on the facts presented. This research focuses on the role of offset organizations to effectively execute offset agreements. For this issue, we will follow chapter III, and chapter IV researches the results and describes the similar points and different points in the political, military, and industrial organizations. Next, we will provide the common recommendations for upgrading the functions of organization for future offset agreements. Finally, recommendations for further research will be presented.

### Findings

The entire offset environments of the ROK and ROC have both similar and different backgrounds. ROK has a potential threat from the North Korea, and the ROC has a potential threat from Mainland China. Both countries are currently industrialized and also want to increase their aerospace technology and to improve their competition in the global market. They consider that offsets might be one of the best way to gain the high technology from the industrialized countries. However, in the political perspective, ROK and ROC have different situations to the US. The ROK has an official relationship with the U.S but the ROC only has an unofficial relationship with U.S.

### The role of political organization

#### Similar Points

The congress and the ministerial levels are considered as the political organization in this paper. There are some similar points for both the ROK and the ROC concerning offset in the political organizations. First of all, in order to make offset policy and offset projects for specific programs, several organizations such as MND, MFE, MST, MTIE, and the Institute for R&D are involved. Second, both the ROK and the ROC have a good communication system in the government to discuss offsets. However the congress is greatly involved in the offsets policy or offset conditions; they just control their budgets.

#### Different Points

There are some different points between the ROK and the ROC. In the ROK, MND has the main role for making offset policy and offset conditions. MND usually makes the final decision, and other ministries support and follow the offset decision of MND. In the ROC, MOEA has the main role for offsets and other ministries; MND supports or follows the offset policy. MOEA enacts the offset policy according to the national industrial development requirement.

### The role of military organization

#### Similar Points

In the role of military organization, each service is considered as the military organizations. The ROK and the ROC have good military systems to accomplish the

offset. Each service provides much data for offset conditions and offset negotiations.

They usually focus on the support for the governments' goals.

### Different Points

The ROK has specific organizations and branches to work offsets in the military. For this, the offset office contacts Korean industry and foreign contractors to prepare and perform the offset agreement. However, the ROC does not have a specific organization for offset. The MND and services create a temporary organization to deal with the offset agreement.

### The role of industry organization

In the ROK, big companies are involved in the aerospace industry, and they want to gain the high technology for the aerospace industry. For this reason, they can afford the high and expensive technology, even though they have government supports. For the future, they are willing to take risks to invest in aerospace. In the ROC, local industries are involved in offset agreements, but most of them belong to small or middle size firms. They need government support and direction. These factors influence the role of organization.

### Similar Points

Both country industries want to gain high aerospace technology by using offsets. The industry also provide offset conditions for use in offset negotiations; however, it is hard for them to influence offset agreements.

### Different Points

In the ROK, the companies which are involved in offsets are big enough and have potential funds to negotiate with foreign industries about offset conditions. So the big companies have offset offices, and they have the capability to negotiate with foreign contractors and to work for offsets. In the ROC, local companies do not have the formal organization to deal with offset programs. When they negotiate with the foreign contractors, they need a government agency to support and provide information.

### Recommendations

According to the Department of Commerce Report in 1996, the Pacific Rim countries which are ROK, ROC, and Malaysia, had only about 14 percent offset credit with the U.S. 29 new offset agreements in 1993 (table 2). The eight European countries got almost 78 percent credit in 29 new offset agreements. Comparing the offset credit percentage of Europe and Pacific Rim regions, it is almost 6 times as large as in Europe. We need to find out the reasons for this difference.

We can divide into three factors such as political influence, technological level, and effective communication to discuss the reasons of difference. First, political issues can influence the offset credit. For example, both the ROK and the ROC have potential threats coming from North Korea and Mainland China so they give priority to acquiring weapon systems. That means they lose their bargaining chips at the beginning. Second, the nation's technological level is another important factor to decide the offset credit. Both the ROK and the ROC belong to industrially developing countries; however, most of their high technologies come from the U.S and Japan. In contrast, the U.S cannot

acquire equal amounts of technology from the ROK and the ROC, so U.S firms do not want to provide too much. For instance, Japan receives much technology through the FSX, however South Korea does not receive too much technology through the KFP. Especially both of ROK's and ROC's offset policies emphasize technology transfer. Third, the effective communication can influence the offset credit. If both buyer and seller can communicate well, they can quietly know both sides' requirements and trust each other that the buyer can get exactly what he wants and the seller can get the long term business relationship.

#### Essential Requirement of Success

There are many factors that may affect the success of offset agreements. Besides adaptation to procurement flow and negotiation, the following factors are of great importance (81:5-8) :

##### 1. Technical Capabilities of Contractors and Their Associated Firms:

A successful industrial cooperation program depends on whether the products or technologies intended in the program are of considerable technical levels and required by local industries or encouraged by industrial policies. If the technical capability of a contractor is not better than the level of local industries or does not meet the industrial policies, it is not good for offset. We can foresee that this industrial cooperation would hardly give much help to local industries and, therefore, the program would not be successful.

## 2. Willingness of Local Firms to Cooperate:

When a contractor is willing to engage in an industrial cooperation program with a local firm, there must be a local firm that is willing to make an investment and buy from or cooperate with the contractor. Therefore, the willingness to invest and the ambition to upgrade on the part of local firms are also important factors to the success of offset agreements. Since coordinated efforts rendered by local firms are very important in the promotion of industrial cooperation, assisting local firms to work in tune with the operation of government promotion organizations in offsets is one of the prerequisites for successful use of offsets. In general, a foreign or domestic firm expresses its intention to make a bid for a procurement contract required to implement industrial cooperation. This firm will try to meet the buyer's offset requirements. Therefore, a bidder has to complete two things. One is to discuss with the relevant buyer's offset organization to work out acceptable cooperation items and modes. The other is to find a definite local cooperation partner if the selected industrial cooperation mode calls for participation by local firms. Only by so doing has the bidder completed the industrial cooperation portion in its bidding preparations. Once the bidder wins the award of contract, the industrial cooperation program may start as planned.

### Common Recommendations For Both of the ROK and the ROC

We can provide the suggestions for successful execution of offset agreements and to increase the offset credit for the ROK and the ROC. After World War II, the arms market suddenly changed from a superpower's monopoly market to oligopoly markets.

The new arms suppliers include France, British, Germany, Italy, Australia, Switzerland, Norway, Israel, and Mainland China. The changing market environment gives the purchasers multiple choices to select from, so the ROK and the ROC should separate the resources among acquisition arms markets. We believe multiple resources can increase the offset credit because of the competition of arms market.

Increasing the technology capability of defense industries may bring a high percentage of offset agreement. Effective communications can help increase the offset credit, because good communications with the U.S. government and defense firms can reduce the jealousies and suspicions on each sides. For example, Spain's embassy has a specific offset office in the U.S. to control their country's offset affairs (107:12). The offset office of Spain did a good job, and they get almost 70 percent offset credit. We think both the ROK and the ROC should set up a permanent offset organization in the U.S. to negotiate with the defense firms and U.S. government and gather the information about current offset situations. We believe both ROK and ROC can easily execute the offset agreement.

#### Recommendation for ROK

When we review the Korea offset organizations in chapter III, we would like to give three suggestions. First is the role of Congress in the offset agreements. It is not easy to find the Congressional role in the offset agreement. Like the U.S. Congress which is highly involved in making offset agreements, if Congress joins and discusses the offset agreement, this may be helpful to improve the national development policies. If this is difficult because of special areas, Congress should use the private or public

research institutes, like GAO for the U.S. Congress. This will improve the offset agreement and also increase the use of the national resources for the nation. Second, we need to increase the role of government level organizations in order to support the national industrial goal when we make the offset policy. South Korea has a good organization in the MND. There is no doubt that this organization can perform offsets; however, this is not enough for the whole nation. For example, MND has KFP and Ministry of Construction and Transportation(MCT) has the high speed subway program. Both programs contain some compensation like offsets within the main contract agreement. However, South Korea does not have an organization which controls offsets in the two programs. Even though MND may select good offset projects and MCT may also select good offset projects through the program, these offset projects may duplicate each other or sometimes do not support the national development policies because of lack of national view. The suggestion is that more high level government organizations should be involved and control in offset agreements in order to maximize the effectiveness of the national resource and get the high technology which serves the national interest. In the KFP, ROK planned AIDP (Aerospace Industry Development Program) and also established the aerospace industry development committee which was included in several ministries (48:127). However, the consistency of the committee could not be maintained; it was temporary organization. We believe the more high-level government organizations involved in offset organization, the more effective offset agreements can match the nation's industrial development policy. Lastly, the role of ADD needs to be increased. The highest goal of an offset agreement is to get high technology from the industrialized country in order to develop industry and improve the

industry competition by using the technology. If ADD controls and distributes the technology learned from the offset, this will increase the use of national resources and will support the national industrial development goals.

#### Recommendation for the ROC

When we review the offset organizations of ROC in chapter IV, we can find it looks like a top-down organization and they emphasize on functional organization. The Ministry of Economic Affairs (MOEA) make the national offset policies and dominates the offset affairs in Industrial Cooperation Steering Committee (ICSC). The advantages of ICSC are ROC can combine their resources to develop their industrial capabilities, and easily enact their future industry-development policies. The disadvantage of ICSC is ICSC is a temporary organization and there is no permanent organization to deal with the offset agreements. As a result, this organization looks like every thing is under control but maybe no one really take cares of the offset agreement. We suggest ROC should enhance the MND and procurement-unit functions, and set up a permanent offset organization in MND and five ad hoc executive committees (as Fig 1). In addition, the function of Aviation and Space Industry Development (CASID) should be upgraded, becoming a special cross-functional organization to execute and integrate the different department offset policies. We believe that if ROC enhances the function of MND and CASID, then the offset organization can easily fulfill the nation's industry-development policies.

### For the Future Research

How to use offset organizations to effectively execute offset agreements is our focus on this research. We analyzed the advantages and disadvantages of ROK and ROC offset organizations. We can find the offset agreement can benefit for both buyer and seller if they have precise goals and detail plans. The offset agreement should be a win-win policy. In recent years, the organization of General Agreement on Tariffs and Trade (GATT) and World Trade Organization (WTO) thinks offset agreements are free trade barriers. They made a lot of limitations to prohibit the offset agreements; however the offset agreement is the world trade tendency in the future. French industry's expertise in arranging and completing contract-related offset is considered a competitive advantage for business. "The Europeans have long argued that they are not going to be willing to give up offsets unless and until the United States is willing to open its defense market," a NATO official said (101:1). For the developing industrial countries, offset is the effective way to acquire the technology but they want to join the organization of GATT and WTO. How to adjust their offset organizations and procedures, and how to balance the trade and technology, we suggest are issues for the future research.

## Bibliography

1. Sancho, C.J. NATO Armaments Cooperation: The Case of The European Fighter Aircraft. MS Thesis, AFIT/GSM/LSM/90D-25. School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB OH, December 1990 (AD-A230867).
2. Farr, C.M. Managing International Cooperative Projects: Rx for Success, Research Report, Air Force Institute of Technology, Wright-Patterson AFB OH, December 1989.
3. Kremer, D. and B. Sain. Offsets in Weapon System Sales: A Case Study of The Korean Fighter Program. AFIT/GLM/LSY/92S-29. MS Thesis, School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB OH, September, 1992 (AD-A259680).
4. U.S. General Accounting Office. Military Exports : Implementation of Recent Offset Legislation. GAO/NSIAD-91-13. Washington: Government Printing Office, December 1990.
5. U.S. General Accounting Office. Concerns Over Offsets Generated With US Foreign Military Financing Program Funds. GAO/NSIAD-94-127. Washington: Government Printing Office, June 1994.
6. U.S. General Accounting Office. Trade Offsets In Foreign Military Sales. GAO/NSIAD-84-102. Washington: Government Printing Office, April 1984.
7. U.S. General Accounting Office. Military Exports Offset Demands Continue to Grow. GAO/NSIAD-96-65. Washington: Government Printing Office, April 1996.
8. Webb, Simon. NATO and 1992 Defense Acquisition and Free Markets. Santa Monica CA. (1989).
9. Russin, J. Richard. "Offsets In International Military Procurement," The DISAM Journal, 105-121. (Summer 1995).
10. "Korean Defense Offset Program Guidelines," Ministry of Defense, Defense Logistics Agency, 37. January 1992.
11. U.S. Office of Management Budget. Negotiations Concerning Offsets in Military Exports, Washington: Government Printing Office, December 1990.

12. Pub. Law No. 100-456, Section 825; 10 U.S. C. 2505 (subsequently renumbered as 10 U.S.C. 2532 By Pub. Law No. 102-585).
13. U.S. Department of Commerce, Bureau of Export Administration, Office of Strategic Industries and Economic Security Strategic Analysis Division. Offsets in Defense Trade. May 1996.
14. Youn, Hyugtaie. The Efficient Management of Overseas Procurement on the Defense Material. MS Thesis, Military National Graduate School, Seoul Korea, December 1989.
15. "The Guideline for Working Level," Defense Logistics Agency (ROK) 1993.
16. Pub. Law No. 102-558, Title I. § 124, 106 Stat. 4207.
17. U.S. Department of Defense. C.W. Duncan Memorandum on General Policy on Compensatory Coproduction and Offset Agreements With Other Nations. 4 May 1978.
18. Dodenhoff, David B. "Defense Offsets" Staff Paper #27 for the Center for International Business and Trade," Georgetown University, Washington. 9 February 1988.
19. "Presidential Policy on Offsets in Military Exports," The DISAM Journal, 12:46-47. (Summer 1990).
20. Wilson, J.R. "Fighting for a First," Jane's Defense Weekly, International Edition 16: 1120. (7 December 1991).
21. "Daewoo Expands Machining Base to Increase Production Capacity," Aviation Week and Space Technology, 130: 219. (12 June 1989).
22. Scott, William B. "South Korean, U.S. Contractors Start KFP Design Work After Signing of Pact," Aviation Week and Space Technology, 133: 53. (9 March 1992).
23. "FX Fighter Program to Set Stage for Air Force Modernization Plan," Aviation Week and Space Technology, 130: 191. (12 June 1989).
24. Bond, David F. "Korea Picks F/A-18 for Coproduction, Cites Capabilities, Industry Benefits," Aviation Week and Space Technology. 131: 34-35. (1 January 1990).
25. "Rising Costs Lead South Korea to Drop F-18," Fight International. 139: 14. (10-16 April 1991).

26. "South Korea F-18 Buy Under Review," Flight International, 138: 4. (7-13 November 1990).
27. "Low Level of Tech Transfer Reported in P&W/ROK Offset," Countertrade Outlook, IX:4. (28 October 1991).
28. U.S. General Accounting Office. U.S. -Korea Fighter Coproduction Program. GAO/T-NSIAD-90-29. Washington: GAO. 4 April 1990.
29. Moxon, Julian. "Congressmen Oppose Korean 'FSX,'" Flight International, 136: 11. (29 July 1989).
30. Brown, David A. and David F. Bond. "South Korea to Buy 120 F-16C/Ds, Reversing Plan to Order F/A-18s," Aviation Week and Space Technology, 134: 30. (1 April 1991).
31. "Aerospace World," Air Force Magazine, 74: 23-25. (September 1991).
32. U.S. General Accounting Office. U.S. -Korea Fighter Coproduction Program - the F-16 Version. GAO/T-NSIAD-91-53. Washington: GAO. 1 August 1991.
33. International Security and Science and Asian and Pacific Affairs of the Committee on Foreign Affairs House of Representatives. U.S., Congress, House, Joint Hearing Before the Subcommittees on Arms Control, U.S. Government Printing Office Washington. 1 August 1991.
34. "The Management of Security Assistance," DISAM (The Defense Institute of Security Assistance Management)-15<sup>th</sup> Edition. (1995).
35. Baker, James A. "America in Asia: Emerging Architecture for a Pacific Community," Foreign Affairs, 70: 1-18. (Winter 1991/92).
36. "Placing Bets on a New Korea," The Economist, 321:37-38. (21 December 1991- 3 January 1992).
37. "Pursuing U.S. Objectives in Asia and the Pacific," U.S. Department of State Dispatch, 3. (6 April 1992).
38. Worthy, Ford S. "Can The Koreas Get Together?" Fortune, 123:126-132. (11 February 1991).
39. Yenne, Bill. McDonnell Douglas: A Tale of Two Giants. Greenwich CT: Beson Books Corp., 1985.

40. "Impact of Offset in Defense Related Exports: A Summary of the First Three Reports," OMB, Washington DC. (December 1987).
41. "The problem offset between South Korea and Lockheed," Daily News Paper in South Korea, February 1996.
42. Emory, William C. and Donald R. Cooper. Business Research Methods. Homewood IL: Richard D. Irwin, Inc., 1991.
43. De Menthe, Boye. Korean Etiquette and Ethics in Business. Lincolnwood IL: NTC Business Books, 1990.
44. Prestowitz, Clyde. "Life After GATT: More Trade is Better Than Free Trade," Technology Review, 94:24-29, April 1991.
45. U.S. Congress, "Office of Technology Assessment," Global Arms Trade. OTA-ISC-Washington: Government Printing Office, June 1991.
46. Griffin, Thomas P. "The Debate Over International Armament Program: Integrating Current Knowledge and the FSX Case" MS thesis, AFIT/GCM/LSY/89S-6. School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB OH, September 1989 (AD-A216344).
47. "F-16 is the main fighter in the ROK", Defense Review, 21st Century Military Research Office, (May 1996).
48. "Aerospace Industry in the ROK", Defense Review, 21st Century Military Research Office, (October 1996).
49. "Analyzing the Peninsula situation through military document", Defense Review, 21st Century Military Research Office, (April 1996).
50. Stephanie G. Neuman. "Coproduction, Barter, and Countertrade: Offset in The International Arms Market," A Journal of World Affairs (ORBIS) 29 (1) 191, 1985.
51. Offset in Defense Trade. U.S. Department of Commerce, Bureau of Export Administration, Office of Strategic Industries and Economic Security Strategic Analysis Division. Washington DC (1996).
52. Russin, J. Richard. "Offsets in International Military Procurement," The DISAM Journal, 6-10. Summer 1995.
53. Shipley, David. "Effects of Countertrade-Divergent Perceptions Between Practitioners," Journal of Management Studies, 25: 57-71 (January 1988).

54. Trice, Robert H. "International Cooperation in Military Aircraft Programs," The DISAM Journal, 12: 75-76 (Winter 1989-90).
55. Webb, Simon. NATO and 1992, Defense Acquisition and Free Markets. Santa Monica CA: Rand Corp. 1989.
56. Welt, Leo G. B. "Military Offsets," National Defense. (March 1984).
57. Storer, Colonel H.S. Jr. Offsets: Their Impact on U.S. Fighting Capability. Executive Research Project # A-29B. Fort McNair DC: Industrial College of The Armed Forces, 1987.
58. Brandt, Craig M. Military Assistance and Foreign Policy. Department of The Air Force, Air University, Air Force Institute of Technology, Wright-Patterson AFB OH, Winter 1989.
59. Hennart, Jean-Francois. "Beyond Barter," Chief Executive (U.S.): 72. (March 1990).
60. Negandi, Anant R. and Peter A. Donhowe. "It is Time to Explore New Global Trade Options," Journal of Business Strategy, 10: 27-31. (January-February 1989).
61. Carter, Joseph R. and James Gagane. "The Dos and Don'ts of International Countertrade," Sloan Management Review, 29: 31-37. (Spring 1988).
62. Alexandrides, C.G. "Countertrade and Global Strategies," Contract Management, 30: 5-6. (September 1990).
63. U.S. General Accounting Office (GAO). Trade Offsets in Military Sales. Report to the Chairman, Subcommittee on Economic Stabilization, Committee on Banking, Finance, and Urban Affairs, House of Representatives, GAO/NSIAD 84-102, 13 April 1984.
64. Roy J. Harris, Jr, "Coproduction Boosts U.S. Arms Sales," Wall Street Journal, (12 July 1984).
65. P. N. Agarwala, "Trade Goes Over the Counter," Far Eastern Economic Review. (1993).
66. "Five Companies Bid for Spain's MBT," Jane's Defense Weekly, (4 August 1984).
67. Weida, William J. Paying for Weapons: Politics and Economics of Countertrade and Offsets. New York: Frost and Sullivan Press, 1986.

68. "Israel Aircraft Industrials are Producing a Conformal Fuel Tank Set for the F-15," Jane's Defense Weekly, (21 July 1984).
69. Gerth Jeff. "U.S. Weapons Makers Ring Up Healthy Profits," New York Times, (April 1985).
70. U.S General Accounting Office (GAO). Trade Offsets in Foreign Military Sales. GAO/NSIAD-88-74. Washington: Government Printing Office. June 1988.
71. Schaffer, Matt. Winning the Countertrade War. New York: John Wiley & Sons, Inc., (1989).
72. Lopez, Virginia C. and Loren Yager. The U.S. Aerospace Industry and Trend Toward Internationalization. Washington: Aerospace Research Center, Aerospace Industries Association of America, Inc., March 1988.
73. "A Study by Industry Identifies Surge Capability Shortfall," Aviation Week and Space Technology, (June 18, 1984).
74. "The Management of Security Assistance," The Defense Institute of Security Assistance Management (DISAM) 15th Edition, (1995).
75. "Offsets in Military Exports," Washington: Government Printing Office, 16 April 1990.
76. Reed, Stanley. "International Outlook: Peace Begins, But Asia is Stockpiling Arms," Business Week, (5 October 1992).
77. "McDonnell Douglas Report to Congress: F-15 Made in America," (1992).
78. "Taiwan Visitor's Guide," Taiwan Visitors Association, (1996).
79. Stewart, Bruce S. Introducing Taiwan in English. Learning Publishing Co., LTD. (1994).
80. The Index of Industrial Development. Industrial Development Bureau Ministry of Economic Affairs of ROC. Industrial Information, 22 Vol. 7th Issues, 1992.
81. Introduction of Promotion of Industrial Cooperation Program. Ministry of Economic Affairs of ROC, Taipei, 1996.
82. Aerospace Industrial Development Plan. Ministry of Economic Affairs of ROC, Taipei, # 040484 of Publication. 1990.

83. Introduction of Aviation and Space Industry of ROC. Ministry of Economic Affairs of ROC, Taipei. August 1995.
84. Park, John L. "Policy Research to Countertrade and the U.S. Trade Deficit: An Appraisal," Business Week, 28: 33-39 (April 1994).
85. "Lockheed Will Transfer Technology to Taiwan," The Free China Journal. (19 May 1995).
86. Jun, Kua-Dun. "How to Negotiate the Offset Agreement?" Aviation Space Industry Communication, Issue 2, (March 1993).
87. Feinstein, Lee. "Administration to Sell Advanced F-16 Fighters to Taiwan," Arms Control Today, (September 1992).
88. "GD Fighter Unit Sale A Boost For Texas," Aviation Week & Space Technology Vol:138 Iss:1 (4 January 1993).
89. Bush, George. "Remark to General Dynamics Employees in Fort Worth, Texas," Weekly Compilation of Presidential Documents (TWCP), Vol: 28 Iss: 7 Sep 1992.
90. Chou, Tien-Hsi. The Views of Taiwan Aerospace Industry. Chu-Ling Publishing Co., LTD. Taipei, Taiwan, 1991.
91. "Industrial Cooperation Short-Term Training," Industrial Development Bureau Ministry of Economic Affairs of ROC. July 1993.
92. "U.S. Firm and ROC Will Cooperate to Provide F-16 Maintenance," The Free China Journal, 21 January 1994.
93. United Daily News, Taiwan, (6 September 1992).
94. World Daily News, U.S, (4 November 1996).
95. Cheng, Tia-lung. "How to Execute Industrial Cooperation ?," A briefing of Industrial Development Bureau, Ministry of Economic Affairs of ROC. March 1993.
96. "GD and ROC Will Cooperate F-16 Spare Parts," The Free China Journal, (16 February 1993).
97. "Taiwan to Make Parts For U.S. F-16 Fighters," Journal of Commerce. 19 July 1994.
98. Defense Industrial Offset Agreement Regulation. MND of ROC Report. February 1995.

99. Huang, Tzu-Chiang. "ROC and Dassault Sign the Offset Agreement," The Central Daily News, 12 July 1996.
100. "Dassault Invests and Cooperates with ROC," World Journal. (19 November 1996).
101. Hitchens, Theresa. "U.S. Offset Initiative Leaves Allies Cold," Defense News. Vol. 11 No. 22. (3-9 June 1996).
102. "Army will renew the overall equipment" Central Daily News (Taiwan). 19 December 1995.
103. "Changing for Second Generation Weapon System" Central Daily News (Taiwan). 30 March 1995.
104. Shea, Hsia. Staff of Committee for Aviation and Space Industry Development Republic of China, Taipei, Taiwan, 11 June 1995.
105. "F-16 and IDF Spare Parts will hand over to civilian firms to produce," Central Daily News (Taiwan). 28 January 1996.
106. Shui, Da-Tsun. "The Research of Technology Transfer Effect of Local Firms," The Tsung-Sun University in Taiwan, Thesis, June 1992.
107. Jimenez, Herrero L. "Compensation Transaction in International Business- Offset Agreement." Review of Aeronautics and Astronautics, Economy and Defense. Number: 576, December 1988.
108. Kim, In-Sik, ROK Senior National Representative, F-16 SPO. Personal Interview Wright-Patterson AFB OH, 12 December 1996.
109. Flaherty, Joseph W., Manager in Technology Applications Industry Participation in McDonnell Douglas MO, 5 August 1996.
110. Lee, Hwa-Soo, ROK Senior National Representative, Kumgang and Baekdu Program. Personal Interview Wright-Patterson AFB OH, 9 February 1997.

### Vita

Mr. Tsung-Cheng Wang was born on July 28, 1958 in PingTung, Taiwan, the Republic of China (ROC). After graduated from high school in 1977, he attended the Chinese Air Technical School, China Air Force (CAF) beginning his military career and he graduated from school in 1980. His first job was as an instructor of Air Anti-Aircraft Artillery School teaching administration management and the basic theory of military vehicle. In 1982, he transferred to 2nd Air Logistics Area Command, CAF taking charge of production management for D/L maintenance. Two years later, he passed the national joint examination for enrolling in the university and graduated from Feng Chia University in 1988.

The late of 1988, he transferred his job to General Headquarters, CAF and worked for the Weapon System Acquisition Management Office (WSAMO). He worked for the Integrated Logistic Support (ILS) section for Indigenous Defense Fighter (IDF) Program for two more years. Then, he changed his office to System Engineering (SE) Section for another two more years, and he went to LeHigh university in Pennsylvania for IDF Structure-Fatigue Analysis Research for three month between this period. In 1992, he transferred his job to Program Management (PM) Section for controlling the Mirage 2000-5 program for two years.

On March 1995, he entered the Graduate System Management Program of the School of Logistics and Acquisition Management, Air Force Institute of Technology.

Permanent Address: 9 F 294 Section 1 Chung-Hsing Road

Hsin-Tien, Taipei Taiwan, ROC.

Vita

Mr. Sangbum Shin was born on 5 August 1962 in Eui-Sung, South Korea. He graduated from Kyeungbook High School in 1981, and received his Bachelor of Arts Degree in Philosophy from Korea Military Academy in 1985. He began his military service career in 1985 as a platoon leader in White Horse Infantry Division. In 1987, he began working as an Aid de Camp for Major General Kwangjong You in 55<sup>th</sup> Division. After graduating from the Office Advanced Course, he was assigned as a company commander in the 61th Division in 1990. He had new assignment as a company commander in the special attack force in 1991. After graduating from the Officer English Course in 1992, he was assigned as the liaison officer of the Eight US Army in South Korea. After graduating from Defense Language Agency in Texas in 1994, he entered the School of Logistics and Acquisition Management at the Air Force Institute of Technology at Wright-Patterson AFB OH to work toward a Masters of Science Degree in Logistics Management.

Permanent Address: 658 Sangri 1 Dong

Eui-Sung Eb, Eui-Sung Gun

Keyngsangbok Province, South Korea

# REPORT DOCUMENTATION PAGE

Form Approved  
OMB No. 0740-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED	
	March 1997	Master's Thesis	
4. TITLE AND SUBTITLE THE ROLES OF OFFSET ORGANIZATIONS IN THE REPUBLIC OF KOREA AND THE REPUBLIC OF CHINA			5. FUNDING NUMBERS
6. AUTHOR(S) Tsung-Cheng Wang, Lt. Col, ROCAF Sang-Bum Shin, Major, ROKA			8. PERFORMING ORGANIZATION REPORT NUMBER AFIT/GSM/LAL/97J-2
7. PERFORMING ORGANIZATION NAMES(S) AND ADDRESS(S) Air Force Institute of Technology 2750 P Street WPAFB OH 45433-7765			
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSORING / MONITORING AGENCY REPORT NUMBER
11. SUPPLEMENTARY NOTES			
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for release; distribution unlimited		12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 Words)  This study sought to describe the role of offset organizations in international arms sales. To describe the role of offset organizations, we separated the political, military, and industrial offset organizations in the international arms sale.  In the literature review, offset history was introduced for the background of this research, and the impact of offset agreements on both sellers and buyers was discussed. The U.S. and McDonnell Douglas offset policies and organizations were described as a main supplier. South Korea and Taiwan offset policies procedures and organizations were described as an example of recipient countries. Korean Fighter Programs and Taiwan F-16 programs also were described as cases.  As one result of this research, that both ROK and ROC want to use the offset agreements to acquire the high technology for improving their aerospace industrial competition in the world and finally become high-tech industrial countries. Second, the ROK's offset organization looks like a bottom-up organization, and it emphasizes the procurement units in Ministry of National Defense (MND). However, the ROC's offset organization is a top-down organization, and it emphasizes the top management level in Department Ministry of Economic Affairs (MOEA).  Both of their offset organizations have some merits and defects, so we made some suggestions for both of them to effectively improve their offset organizations for the future offset agreements.			
14. SUBJECT TERMS Offset, Offset Policy, Offset Organization, ROK and ROC Fighter Program,			15. NUMBER OF PAGES 116
			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED	20. LIMITATION OF ABSTRACT UL
NSN 7540-01-280-5500			

**AFIT RESEARCH ASSESSMENT**

The purpose of this questionnaire is to determine the potential for current and future applications of AFIT thesis research. Please return completed questionnaire to: AIR FORCE INSTITUTE OF TECHNOLOGY/LAC, 2950 P STREET, WRIGHT-PATTERSON AFB OH 45433-7765. Your response is important. Thank you.

1. Did this research contribute to a current research project?      a. Yes      b. No
  
2. Do you believe this research topic is significant enough that it would have been researched (or contracted) by your organization or another agency if AFIT had not researched it?      a. Yes      b. No
  
3. Please estimate what this research would have cost in terms of manpower and dollars if it had been accomplished under contract or if it had been done in-house.

Man Years \_\_\_\_\_ \$ \_\_\_\_\_

4. Whether or not you were able to establish an equivalent value for this research (in Question 3), what is your estimate of its significance?  

a. Highly Significant	b. Significant	c. Slightly Significant	d. Of No Significance
--------------------------	----------------	----------------------------	--------------------------
  
5. Comments (Please feel free to use a separate sheet for more detailed answers and include it with this form):

---

Name and Grade

---

Organization

---

Position or Title

---

Address